Engineering Library

ENGINEERING:

An Illustrated Weekly Journal.

EDITED BY WILLIAM H. MAW AND B. ALFRED RAWORTH.

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J. L. S. HATTON, M.A. J 807

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Tenders must be delivered in separate envelopes sealed and addressed to the undersigned, marked "Tender for Spare parts of Carriages and Wagons," or as the case may be, not later than Eleven o'clock a.m. on Tuesday, the 8th January, 1918.
The Directors do not bind themselves to accept the lowest or any Tender.
E. H. WALPOLE,
Company's Offices, Secretary.
48, Copthall Avenue, London, E.C.
22nd December, 1917. J 873

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AMENDED ADVERTISEMENT.

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Secretary to the Education Committee.
15th December, 1917. J 868

Mersey Ship Repairers' FEDERATION REQUIRE a SECRETARY with some technical training and acquainted with Trade Union Regulations.—Apply, by letter, THE CHAIRMAN, 10, Water Street, Liverpool. J 863

NEWCASTLE-UPON-TYNE EDUCATION COMMITTEE.

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The teacher appointed may, if he so desires, avail himself of the provisions of the local Superannuation Scheme.
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PERCIVAL SHARP, J 812
Director of Education.

LOUGHBOROUGH TECHNICAL INSTITUTE.

Principal—H. SCHOFIELD, B.Sc. (Lond.).

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W. A. BROCKINGTON, M.A.,
Director of Education. J 870

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Aeroplane Factory, N.W., has VACANCY for a capable RATE FIXER, used to work in connection with light metal fittings, preferably, but not necessarily with previous experience of aircraft work. No one residing more than ten miles away or already engaged on Government work need write to BOX 679, Sells Ltd., 168, Fleet Street, E.C. 4. J 492

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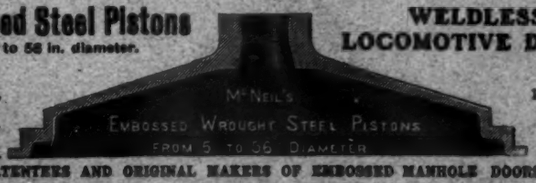

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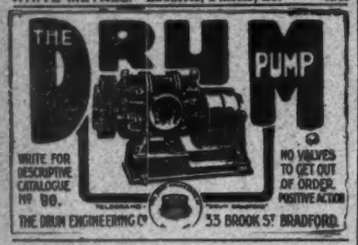

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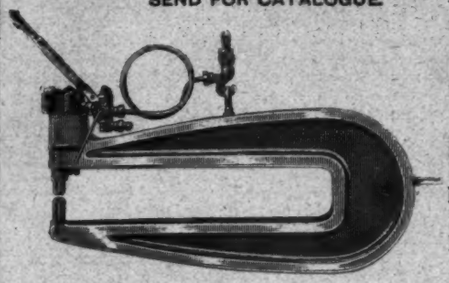

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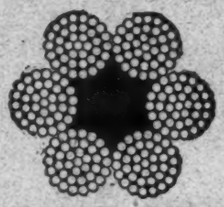

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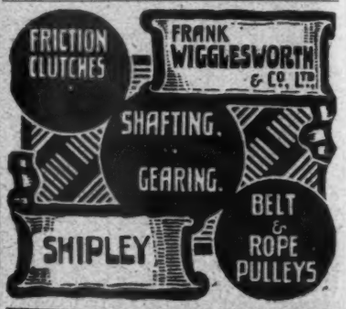

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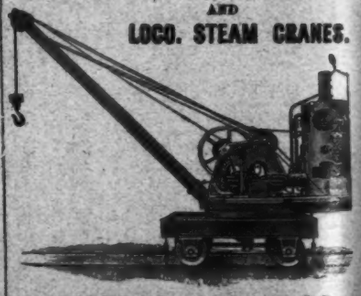

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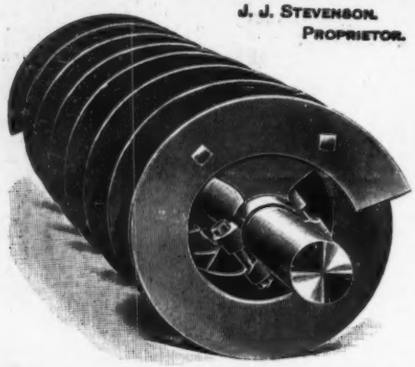

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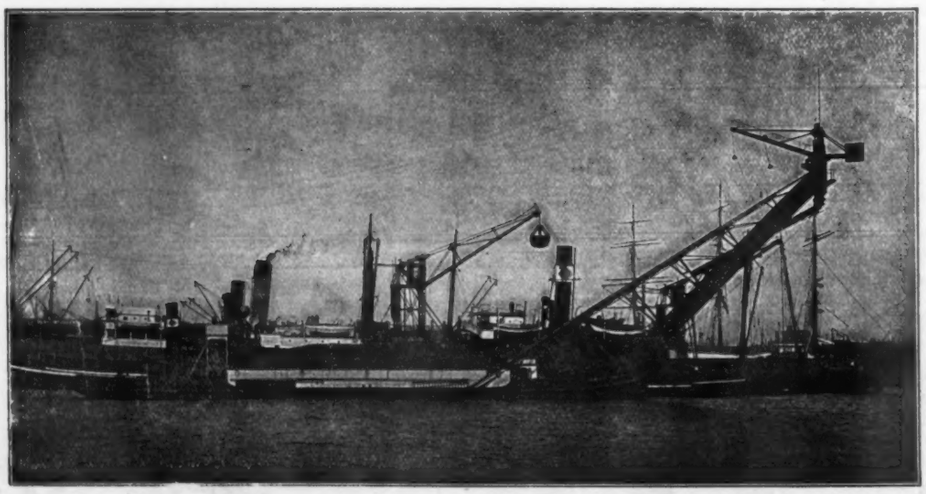

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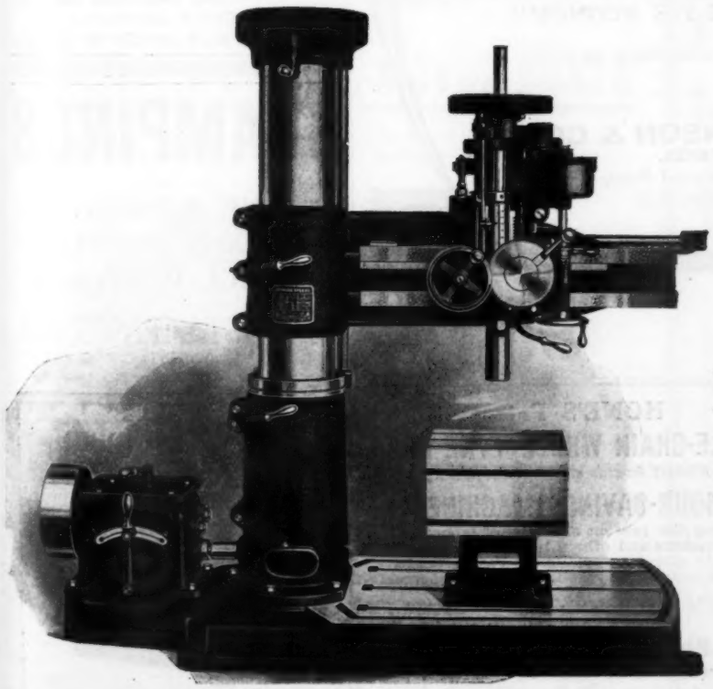

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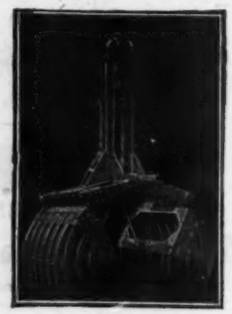

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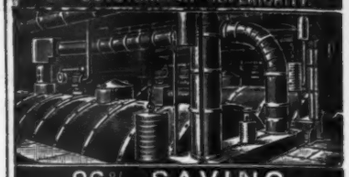
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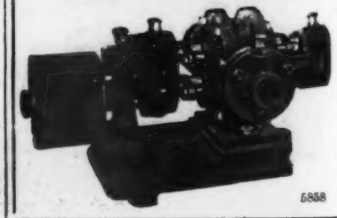
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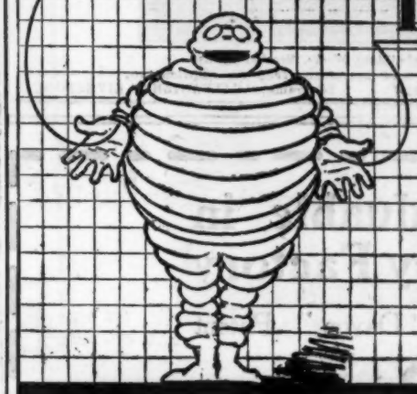

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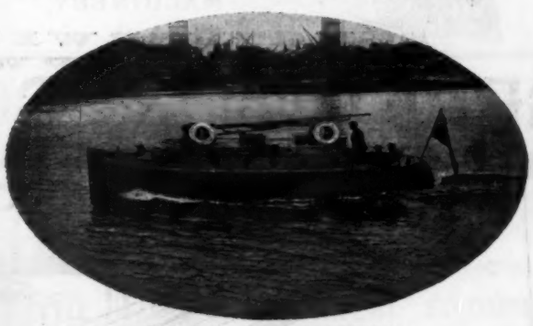

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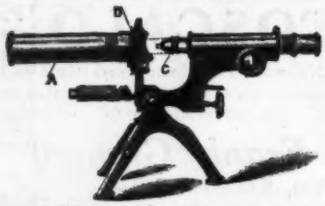

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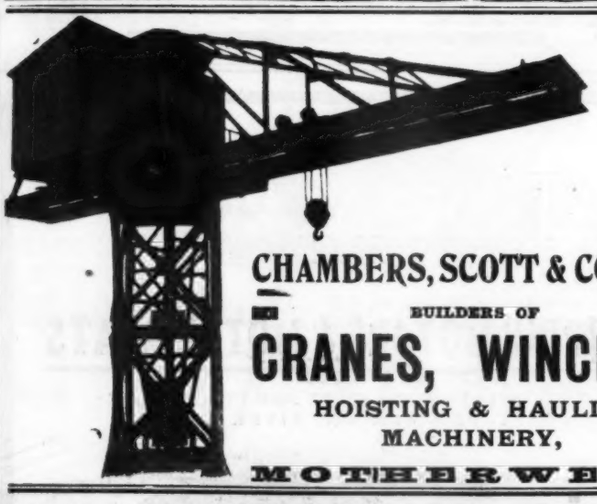

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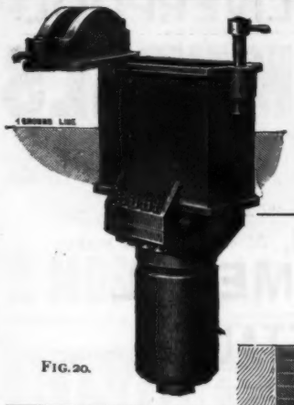

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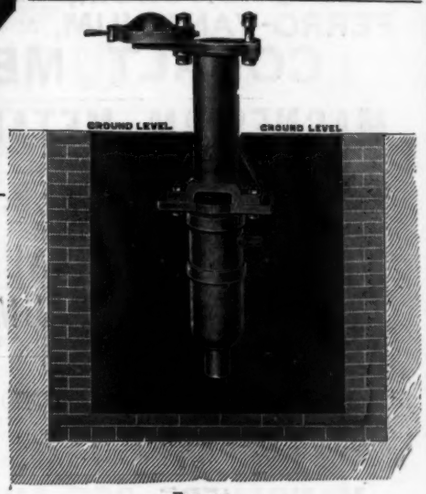

FIG. 22.

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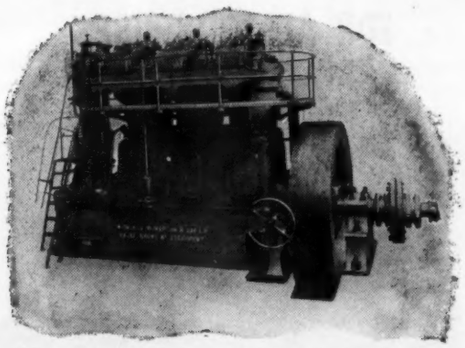

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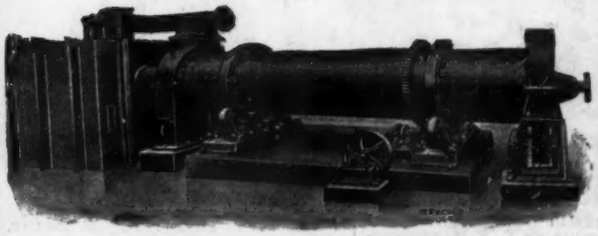

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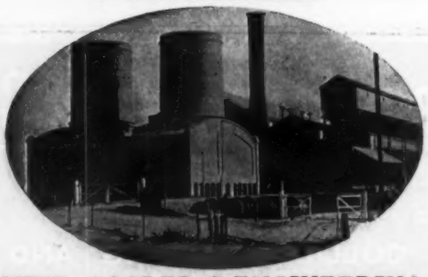

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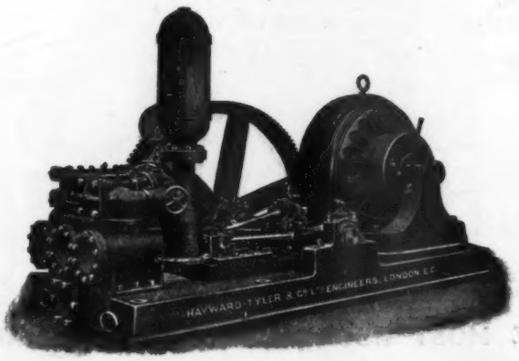

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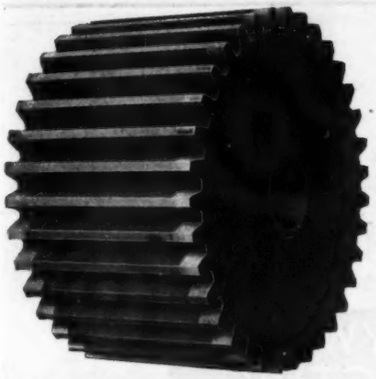

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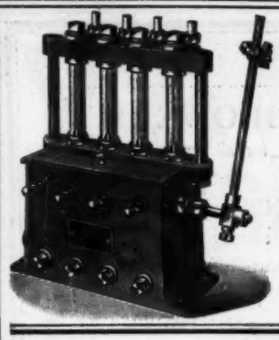

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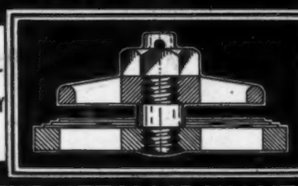

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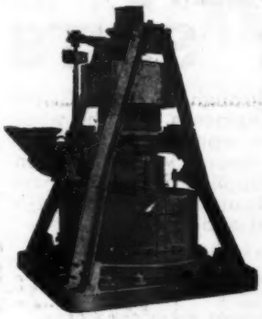

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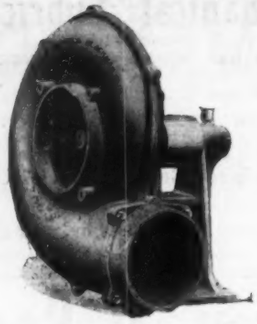

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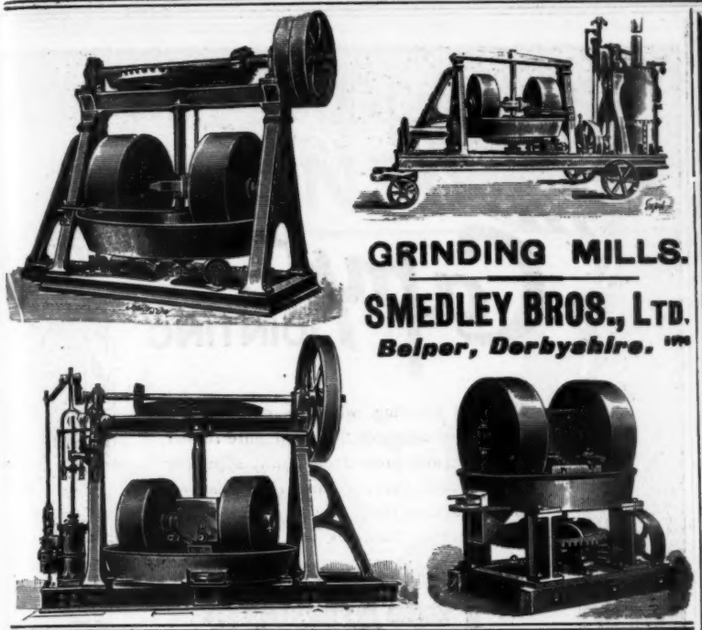

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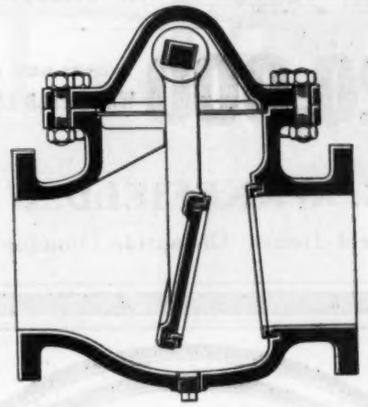

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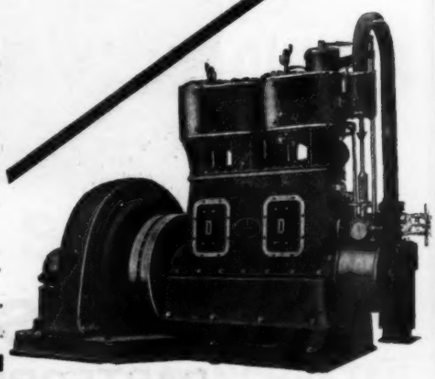

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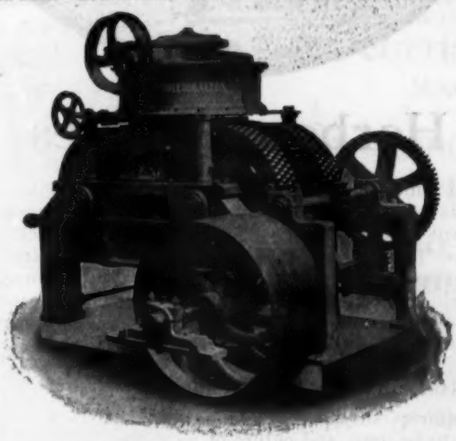

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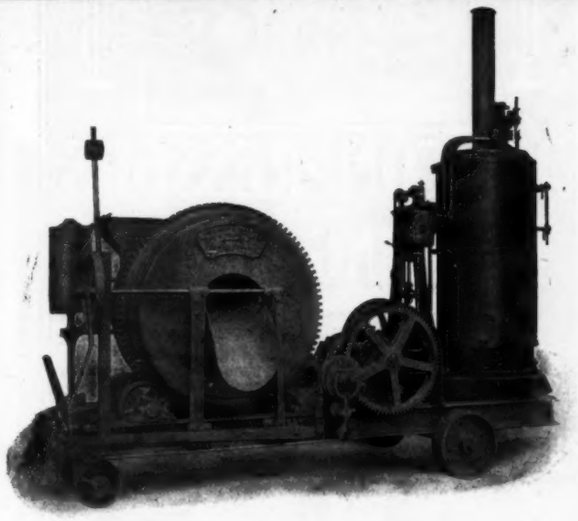

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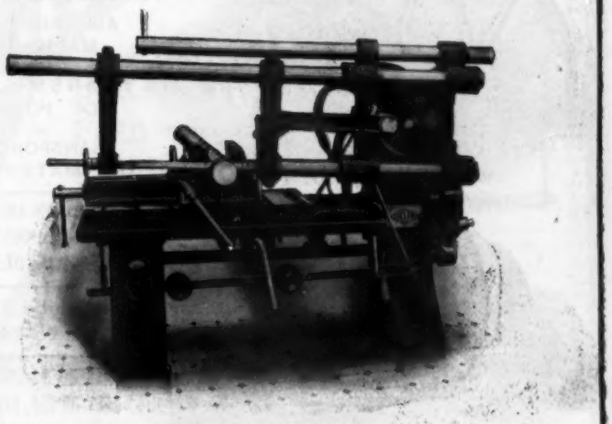

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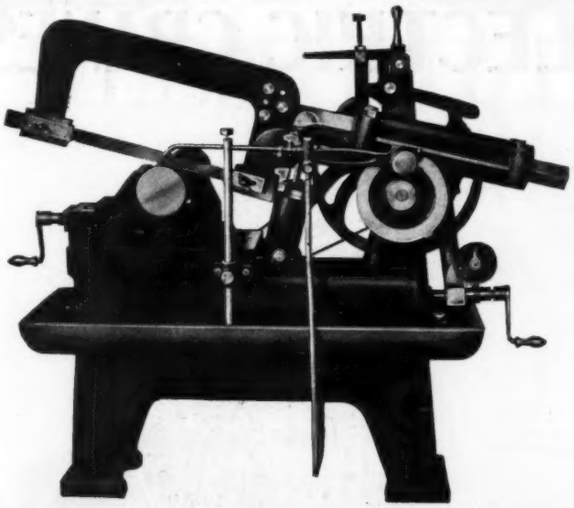

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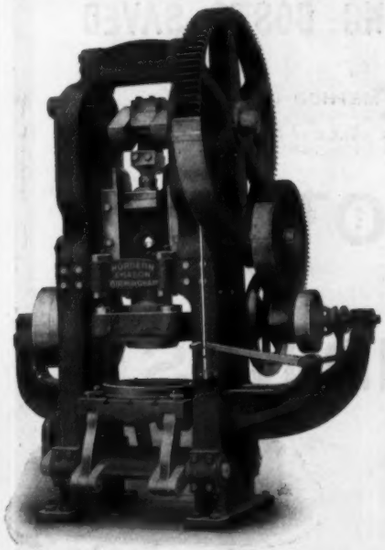

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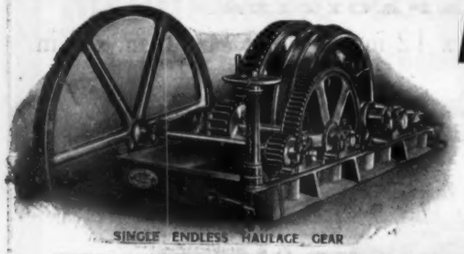

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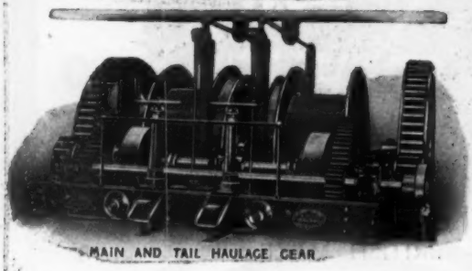

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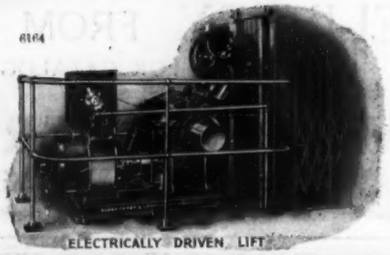

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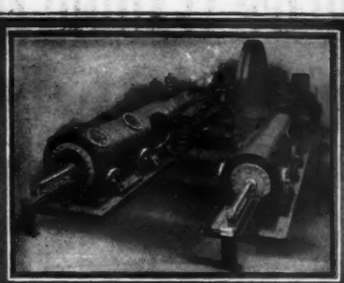

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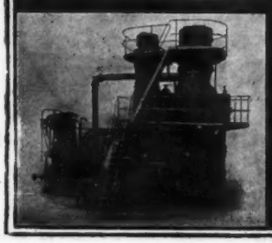

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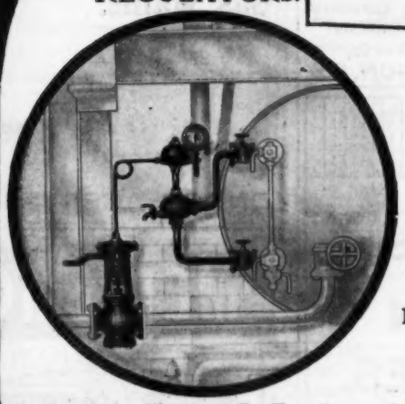

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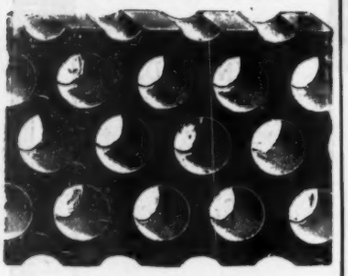

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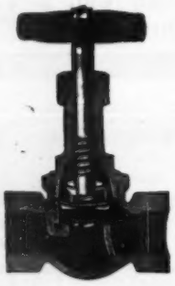

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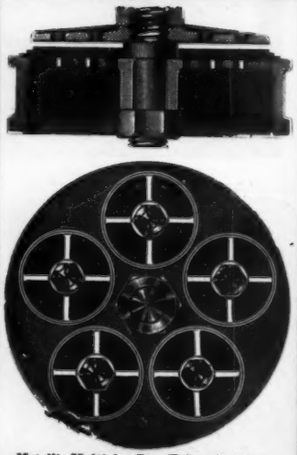

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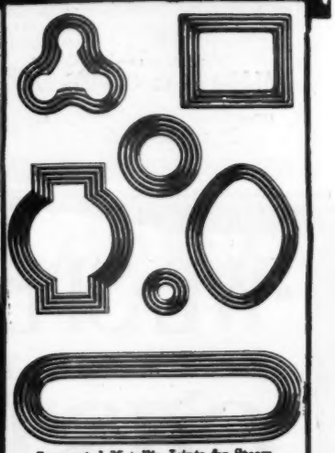

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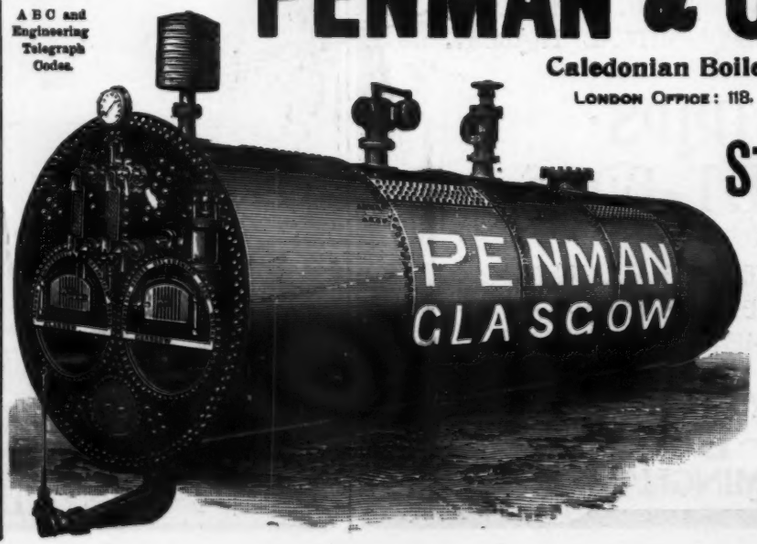

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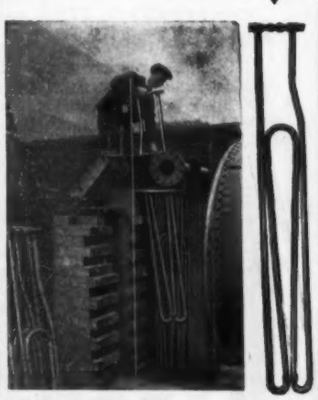

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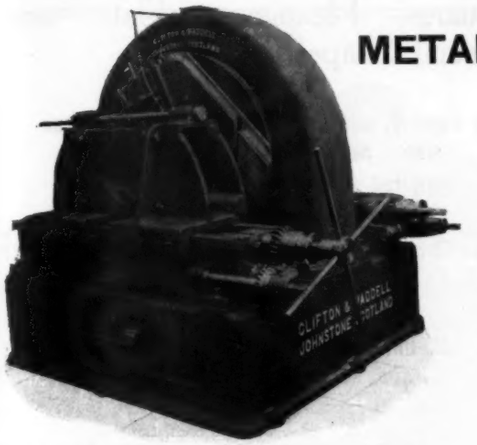

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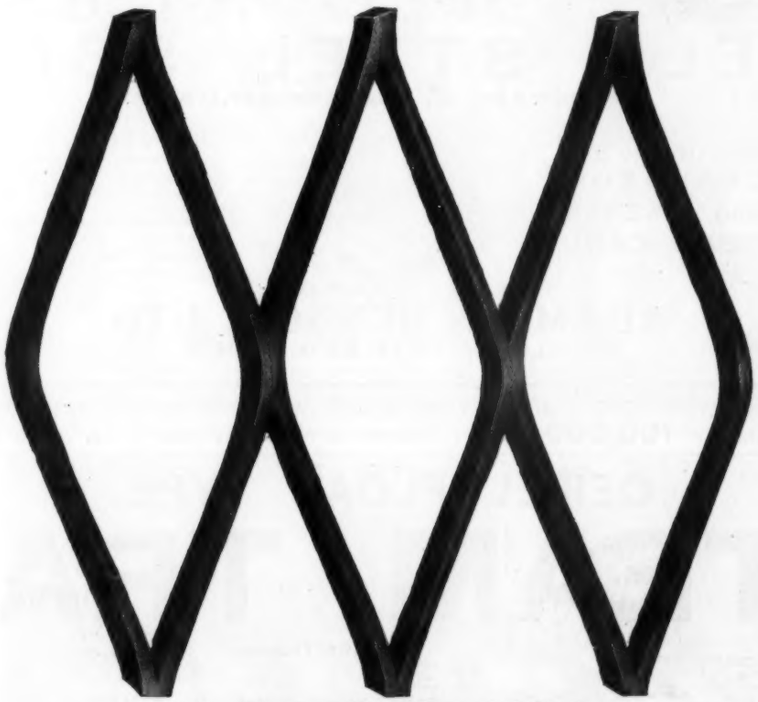

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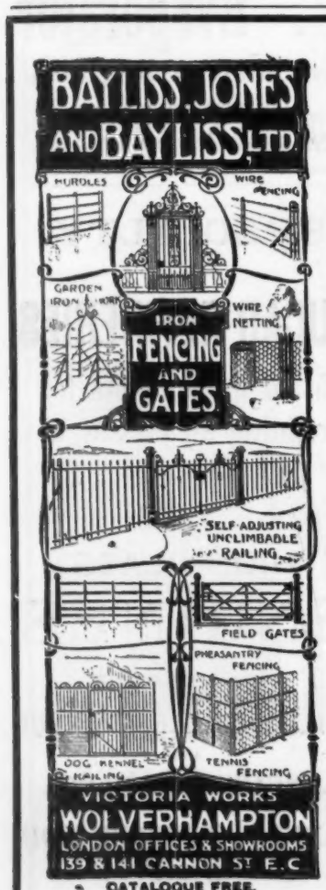

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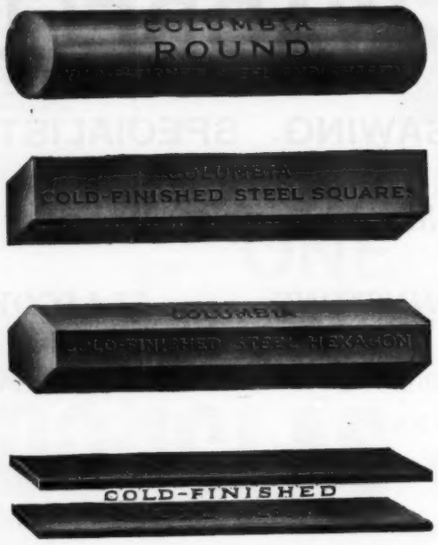

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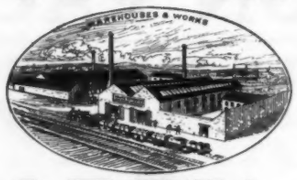

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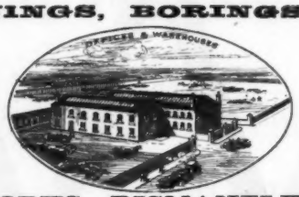

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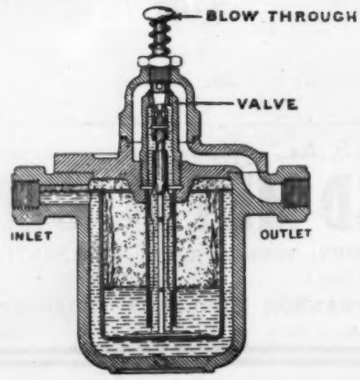

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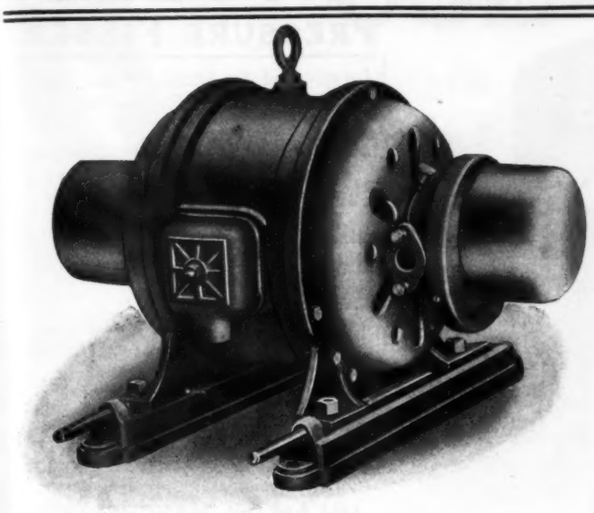

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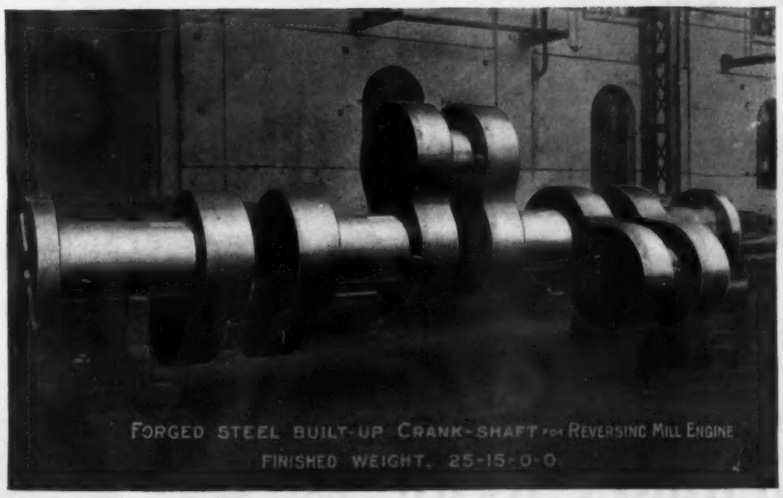

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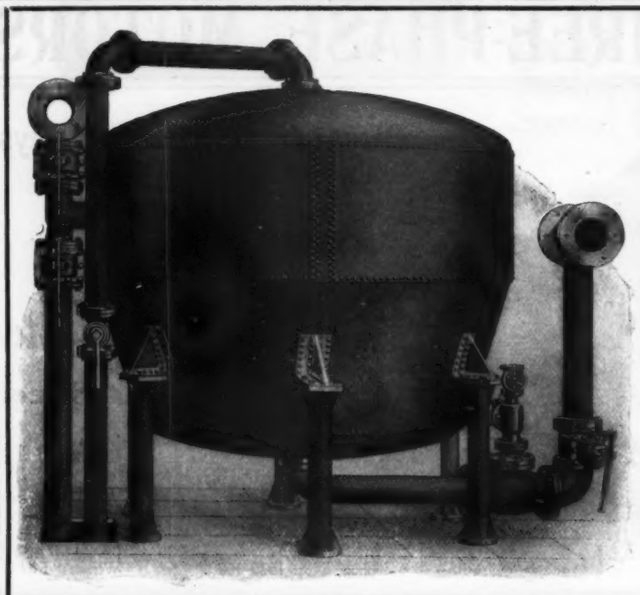

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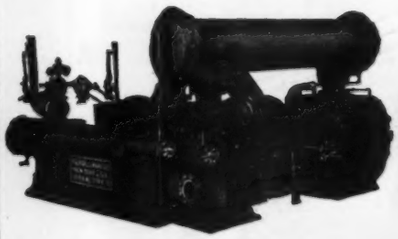

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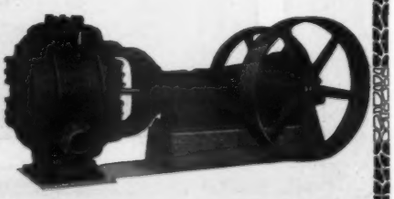

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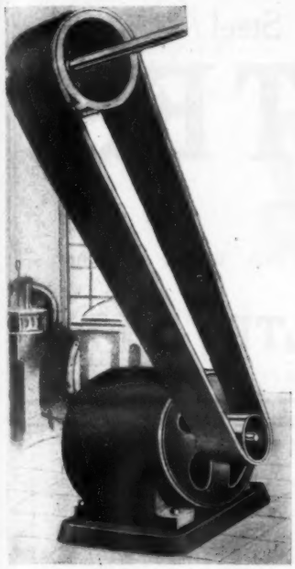

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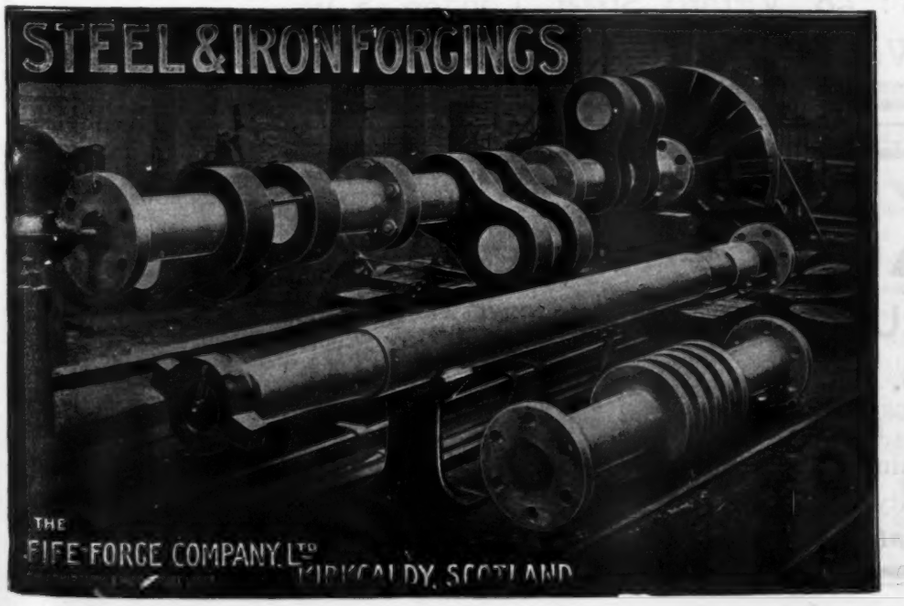

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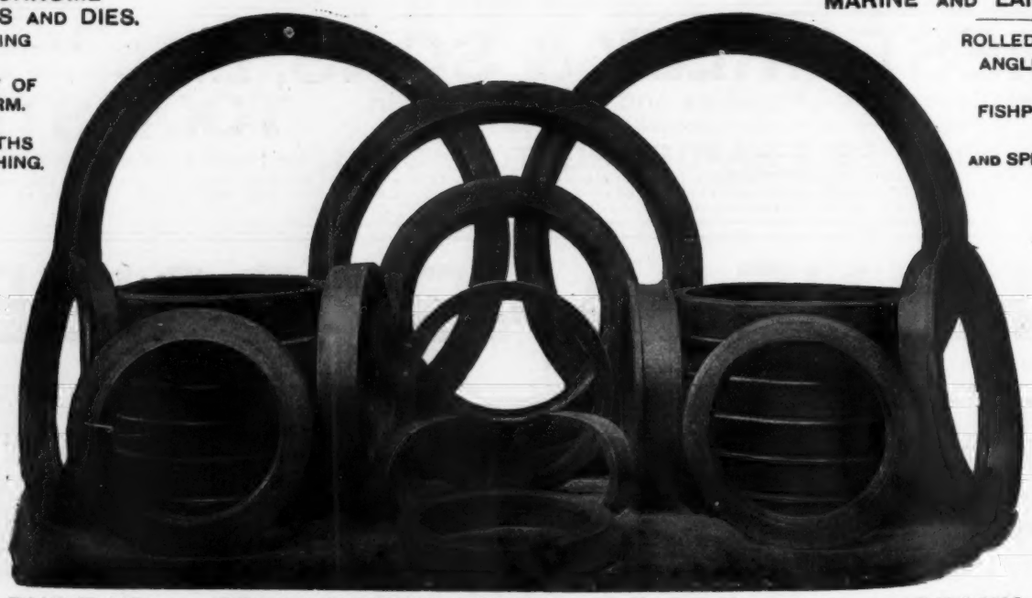

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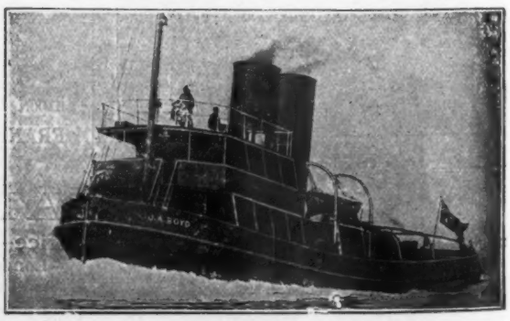

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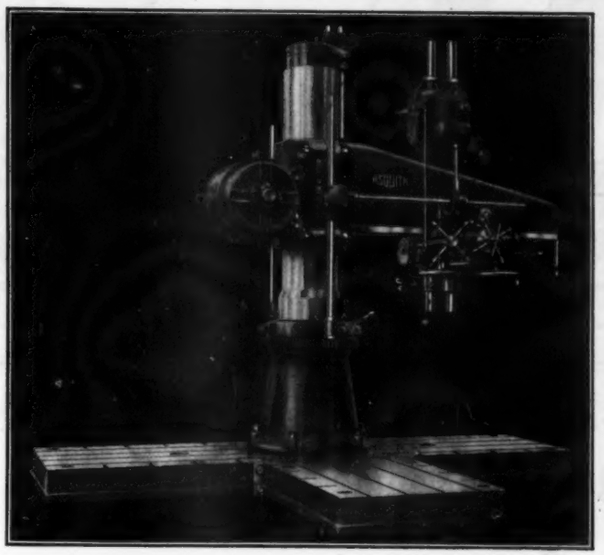

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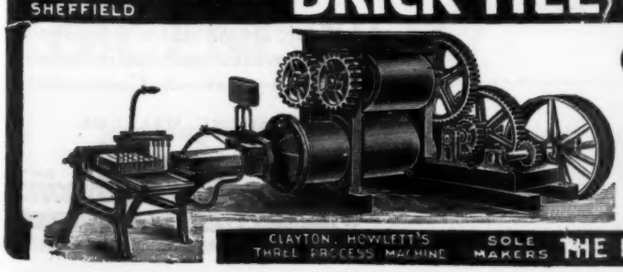

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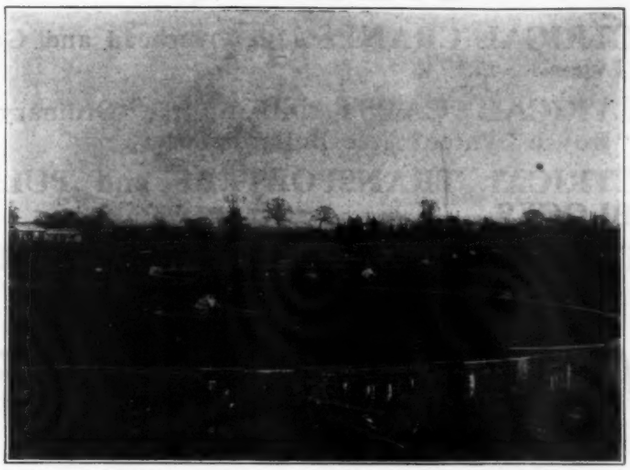

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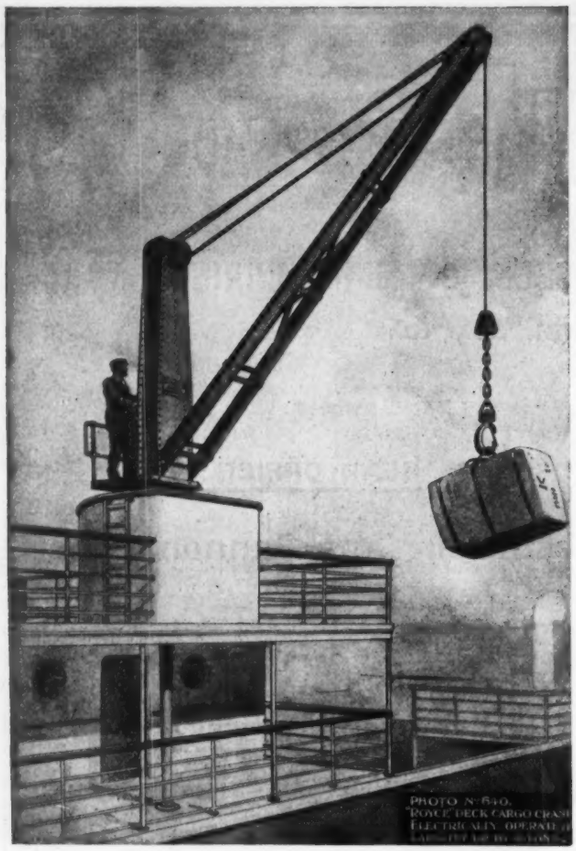

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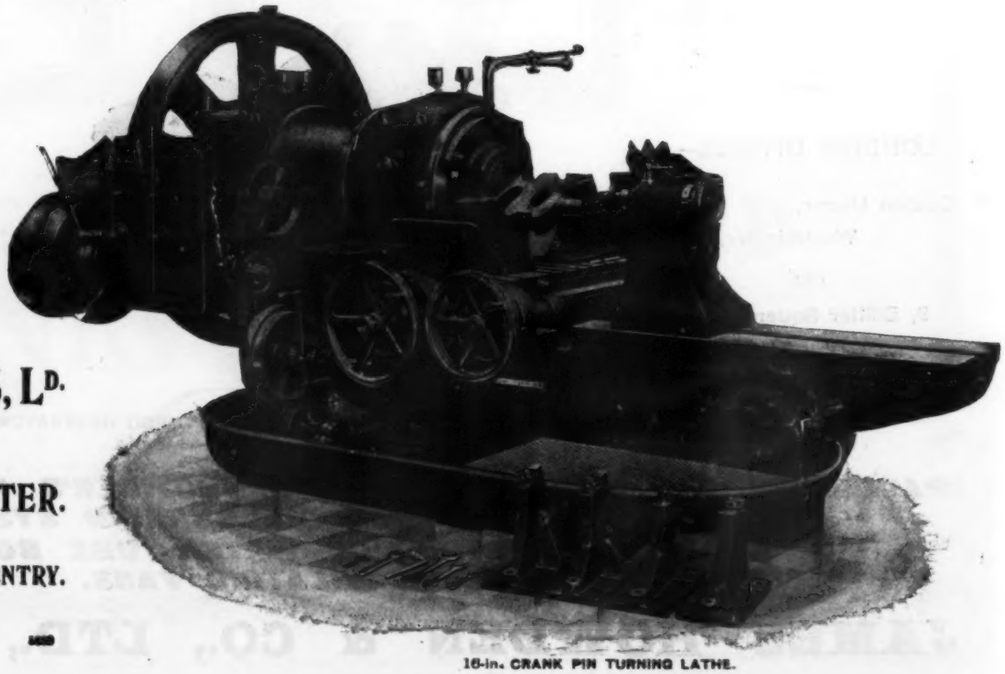

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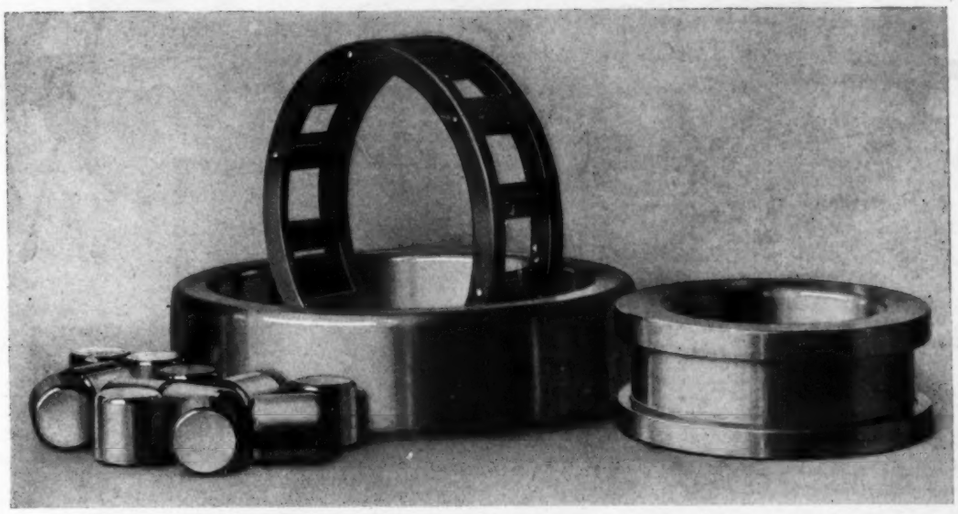

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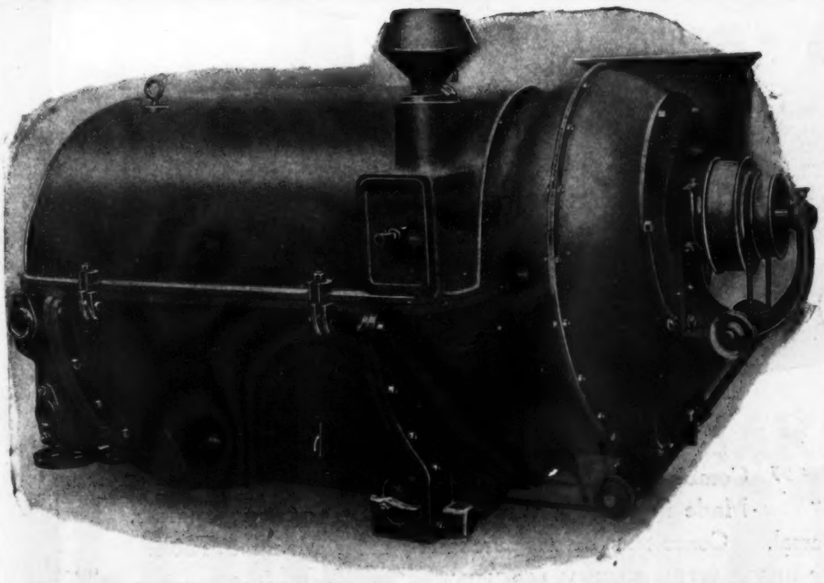

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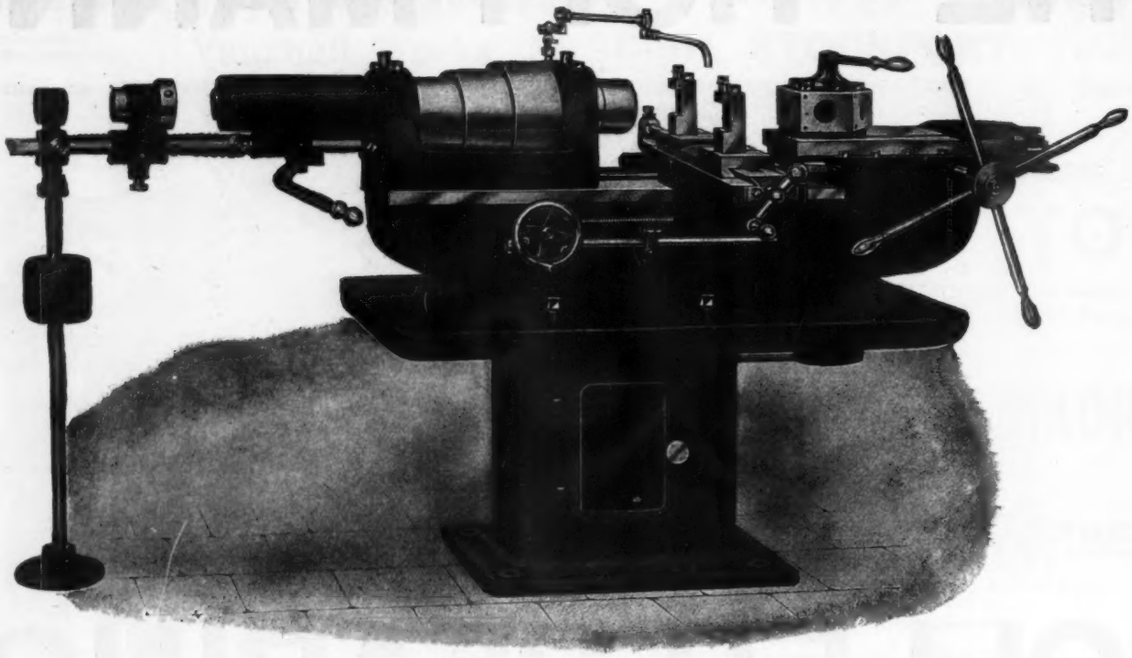

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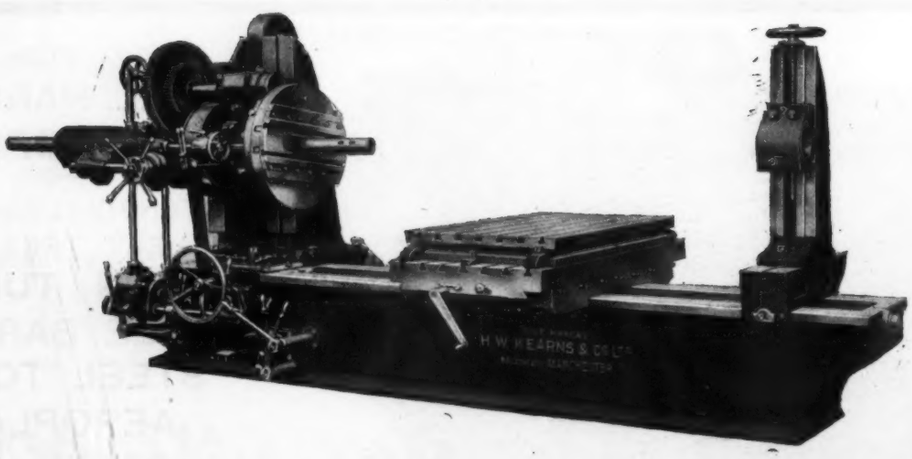

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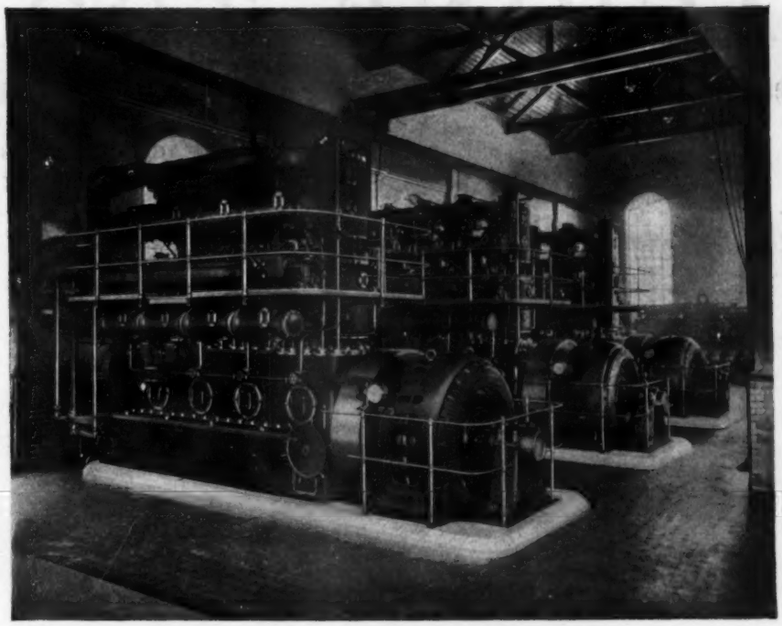

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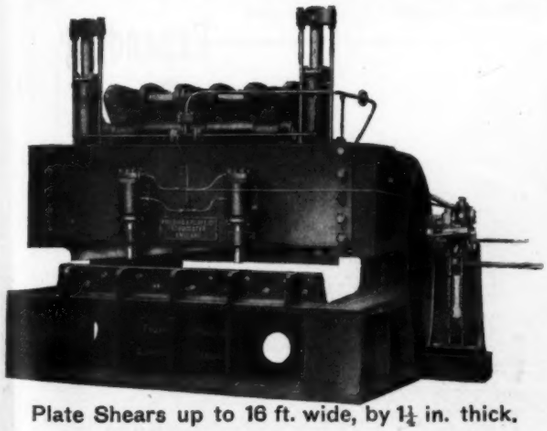

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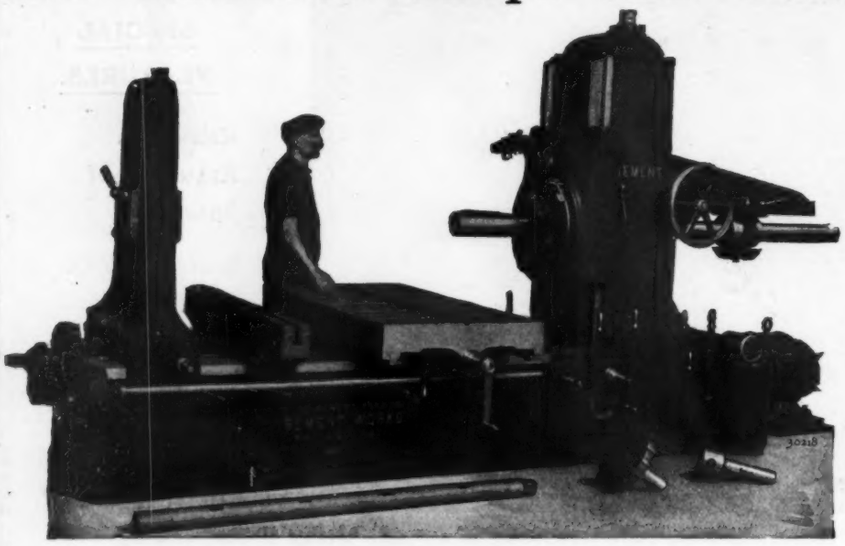

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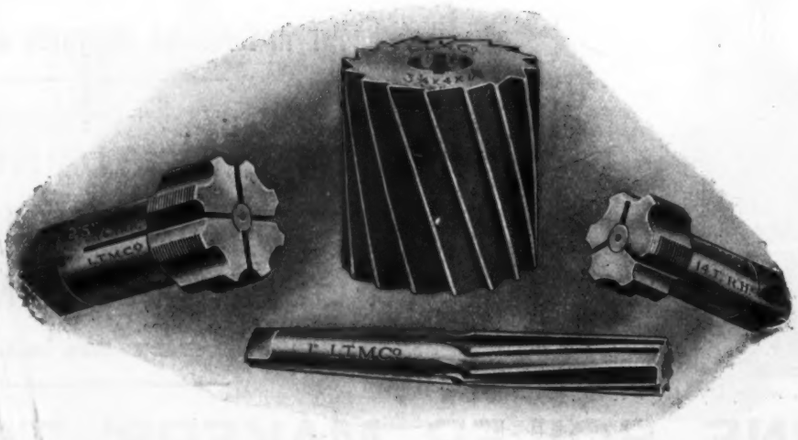

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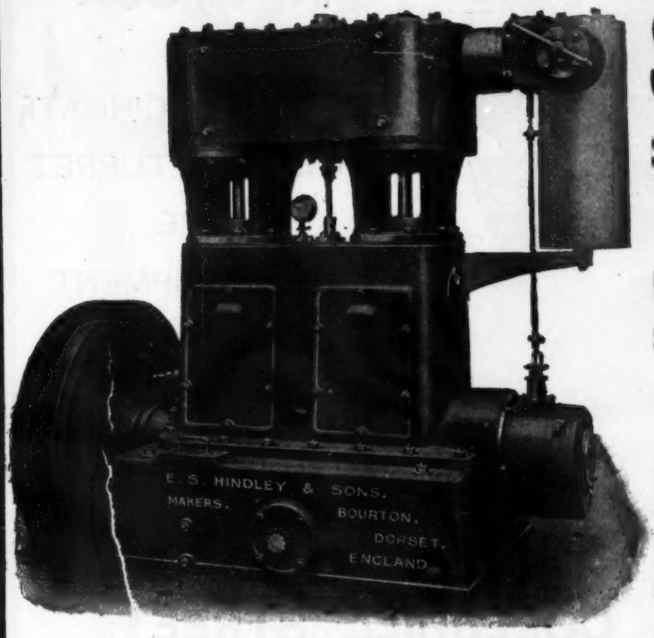

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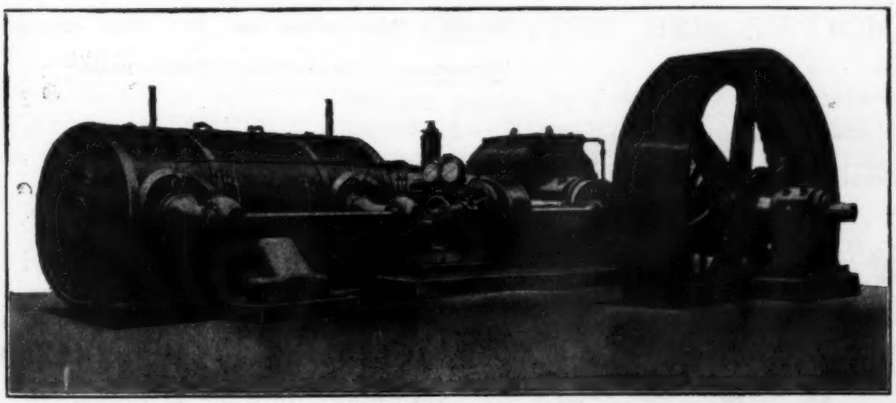

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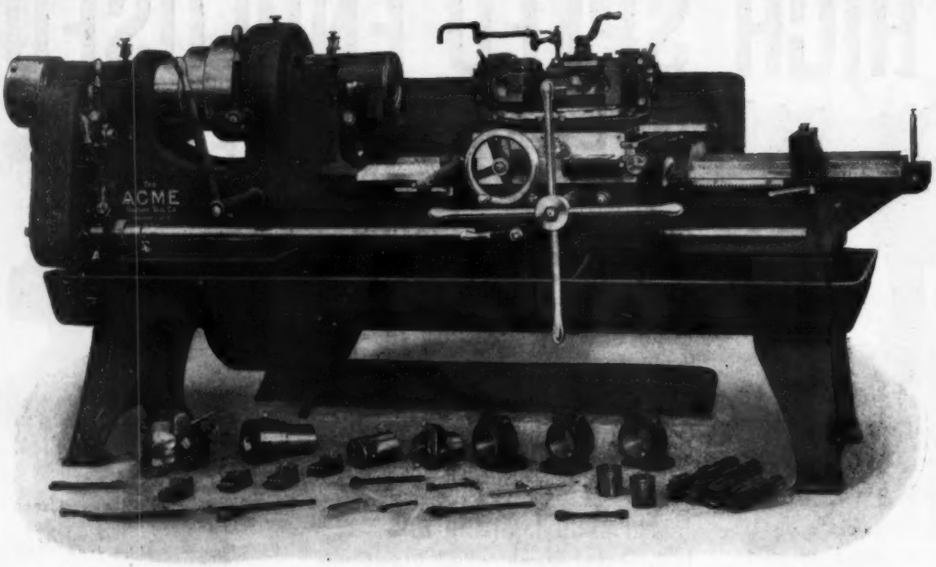

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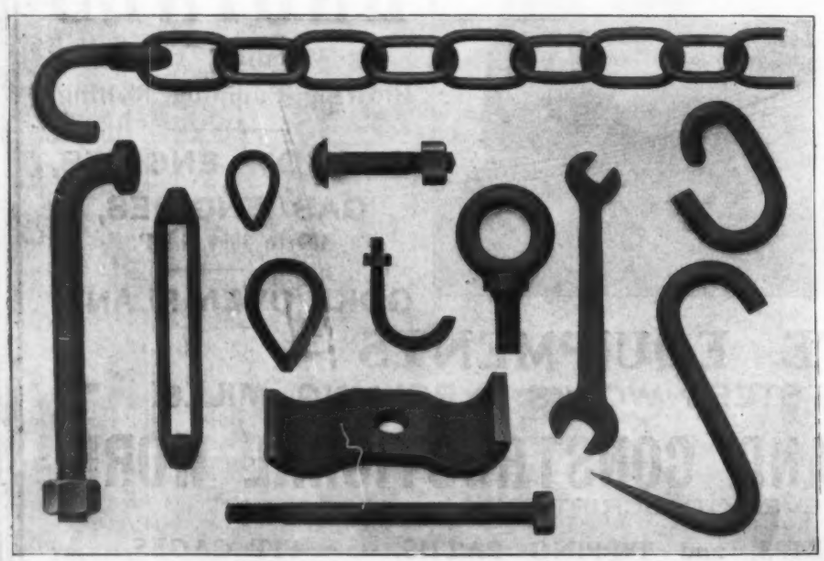

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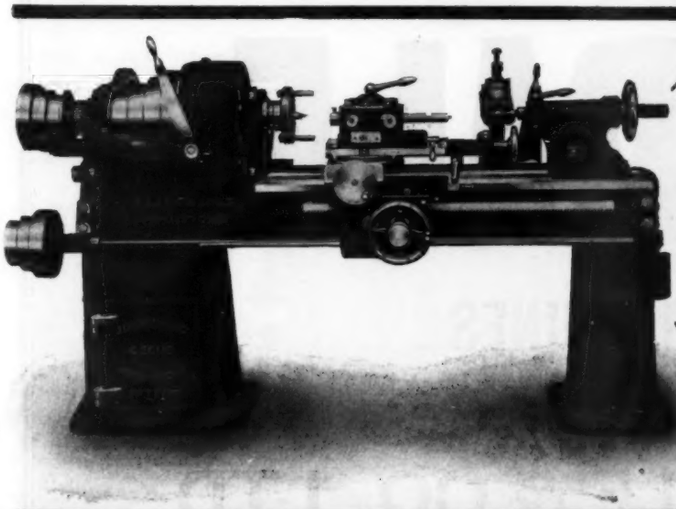

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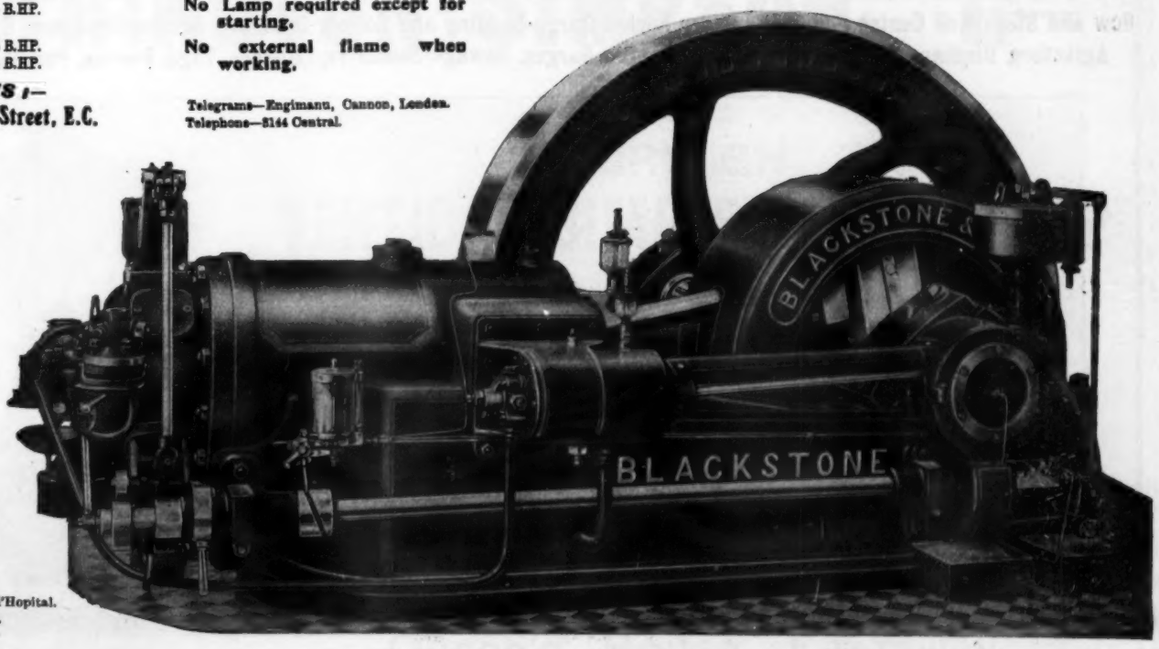

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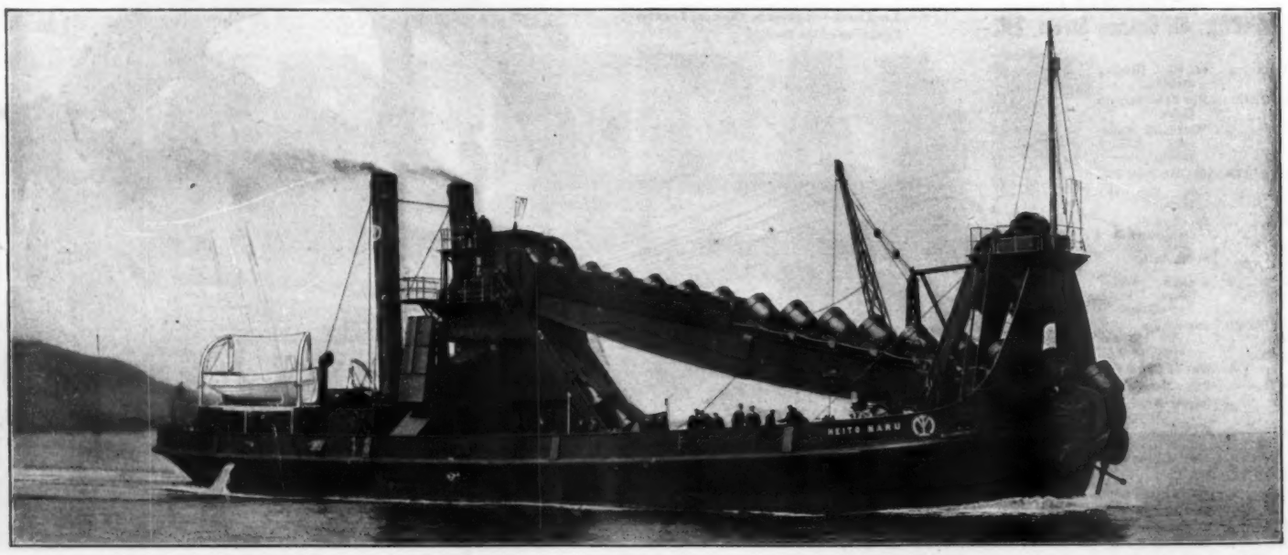

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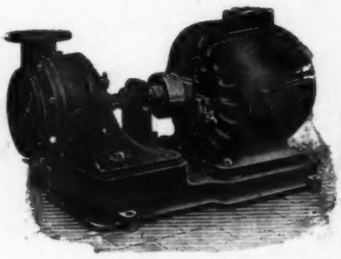

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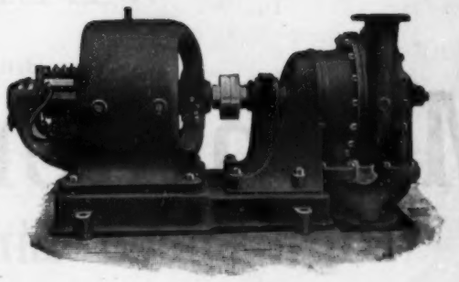

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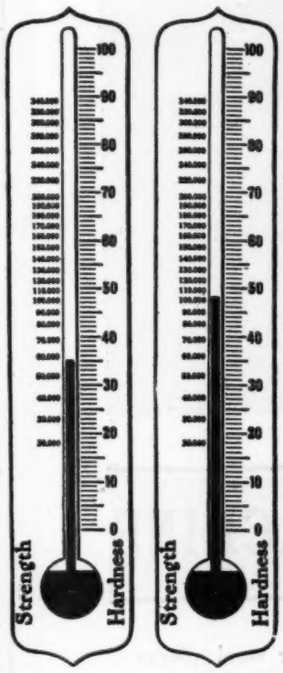

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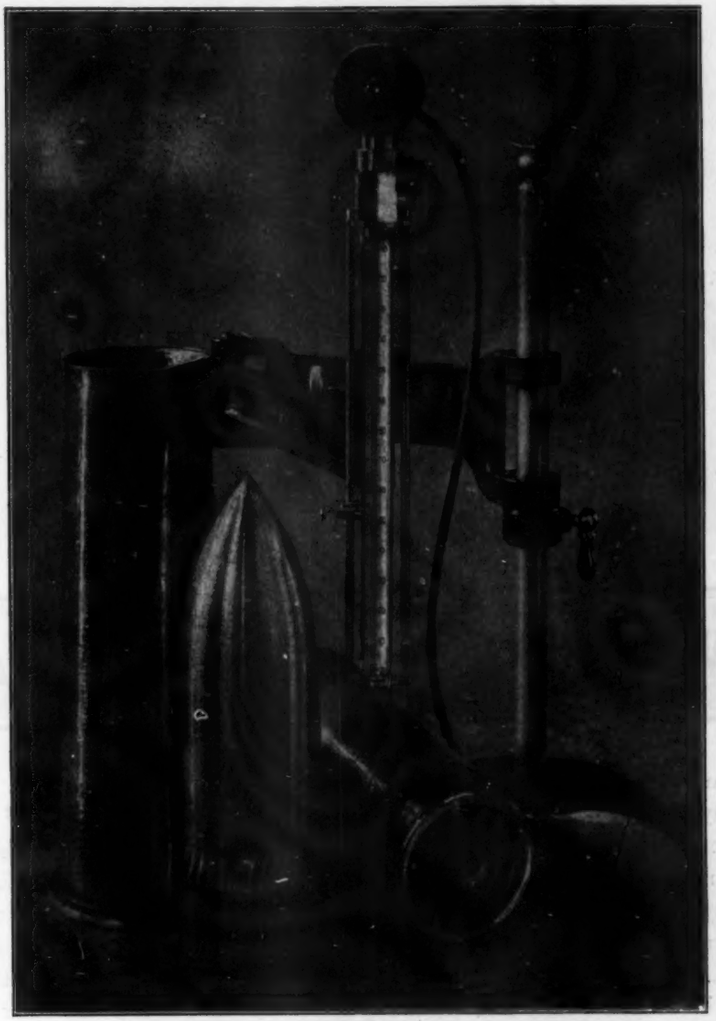

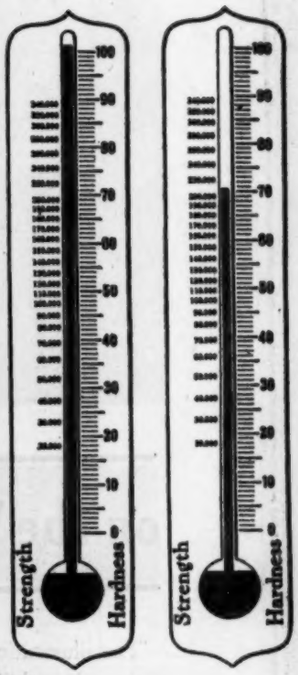

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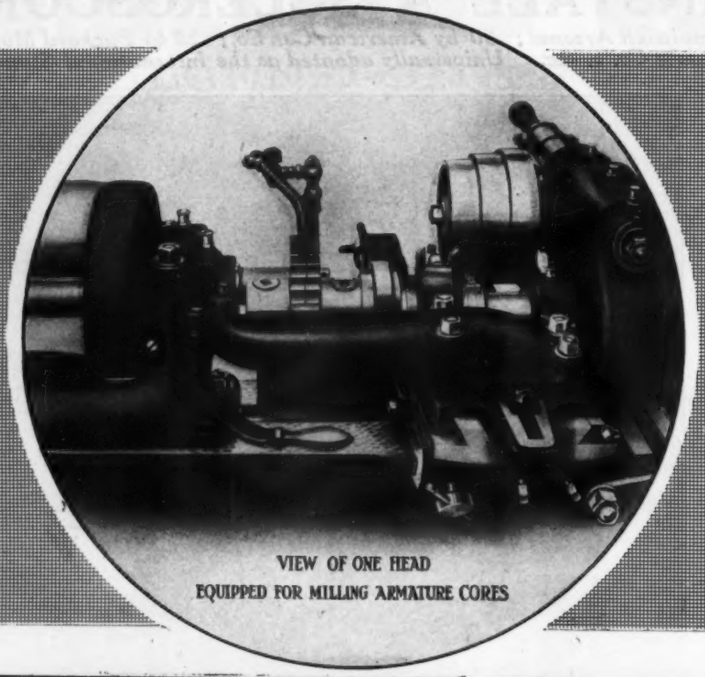
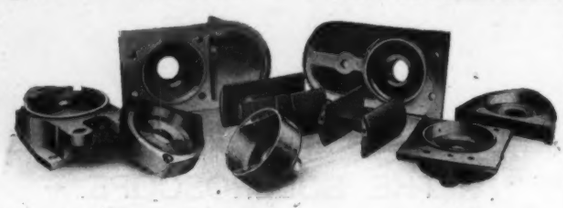


VIEW OF ONE HEAD
EQUIPPED FOR MILLING ARMATURE CORES

on the W. & B. PROFILE MILLING MACHINE

The illustration shows still another example of the adaptability and usefulness of the Duplex Horizontal Profile Milling Machine. It is shown equipped for milling magneto Armature Cores between the flanges, and many machines are in use on this work—doing it well, quickly, and cheaply, too! The machine is generally similar to the standard machine as previously described, but one or both cutter heads are arranged with single purchase gearing, thus enabling the machine to operate on iron or steel pieces requiring cutters more than 12" diameter. Our Treatise on Profile Milling, which has just been published, describes this operation fully, and also gives clear practical data on other work for which the various types of our Duplex Horizontal Milling Machine are adapted. It is a treatise that will repay the careful study of all interested in the machining of irregular-shaped surfaces, and it is sent post free on request. Send to-day!



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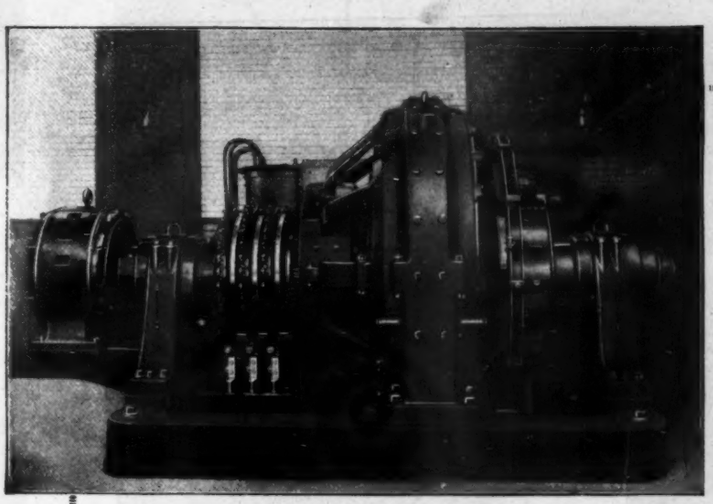

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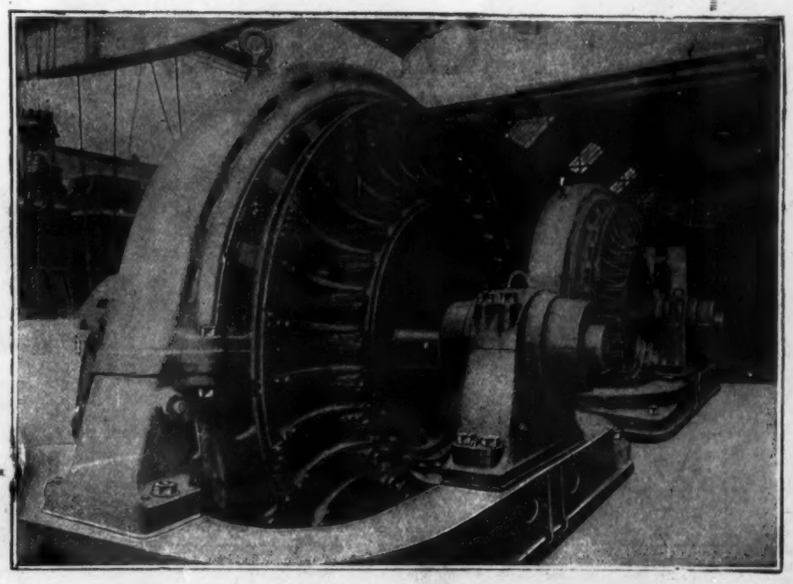

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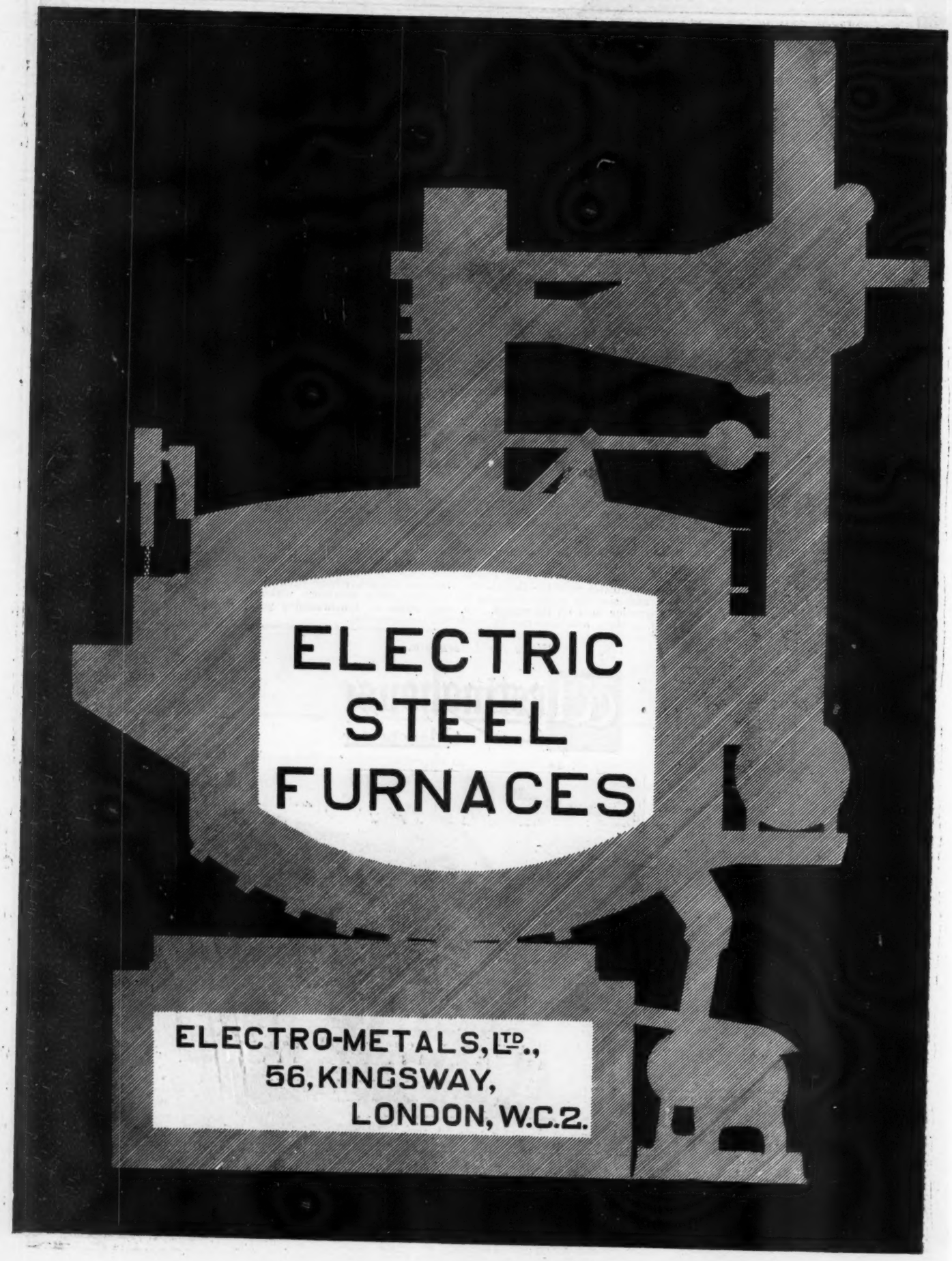
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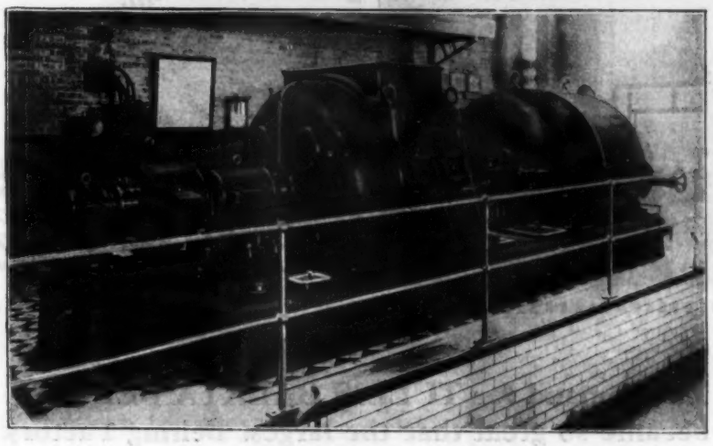

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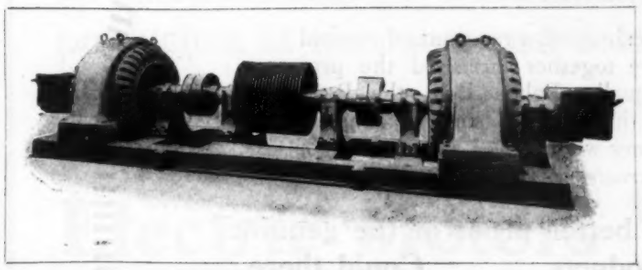

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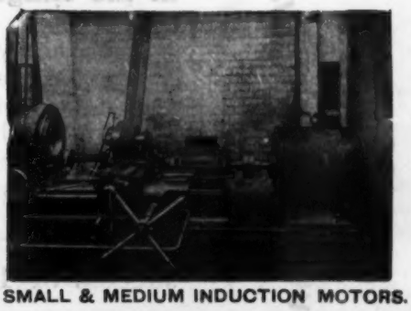

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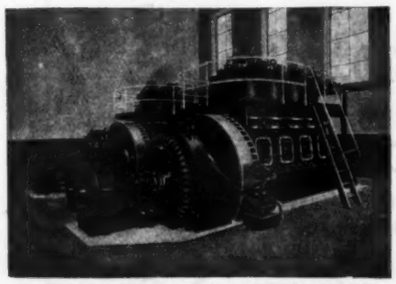

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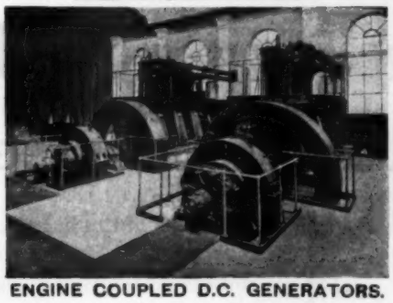

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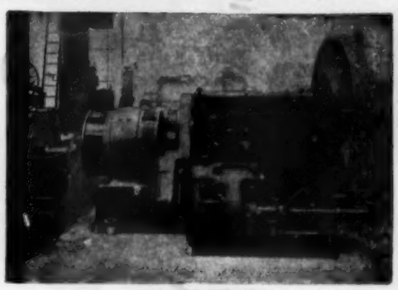

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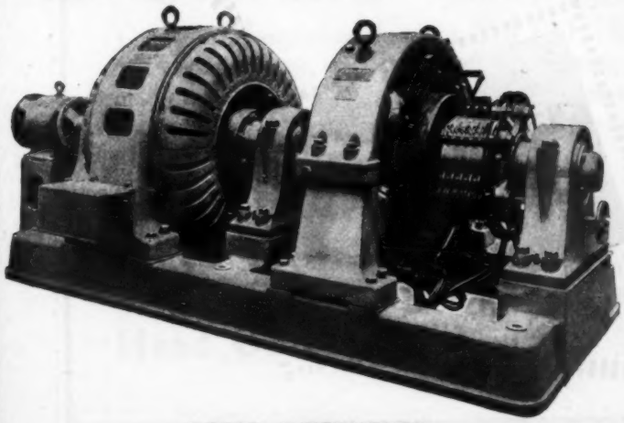
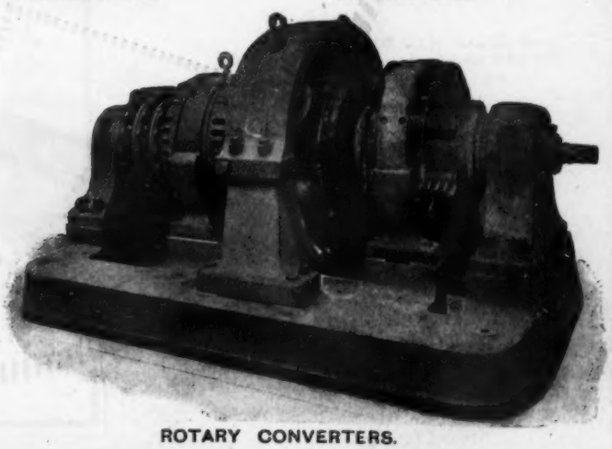


MOTOR ALTERNATORS.



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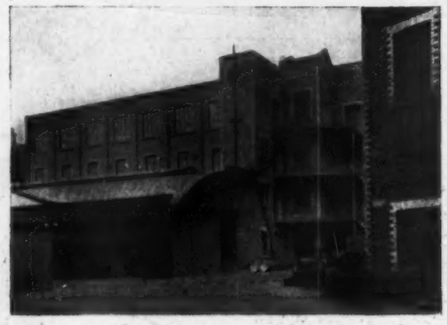

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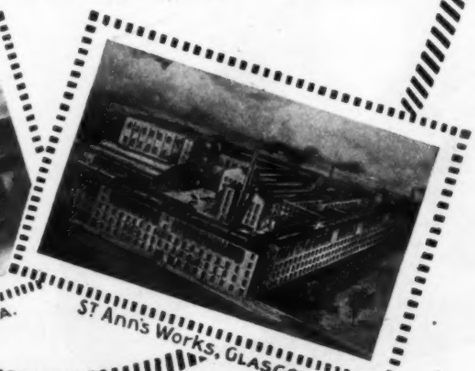

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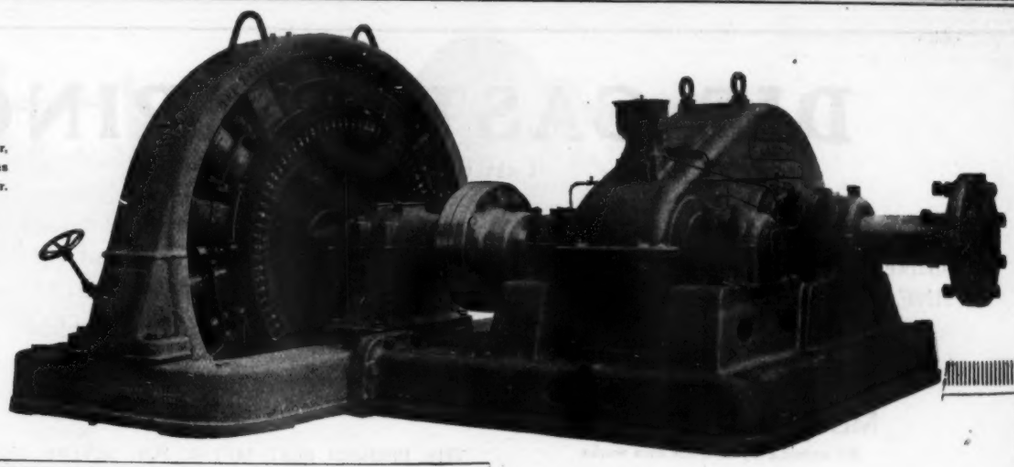

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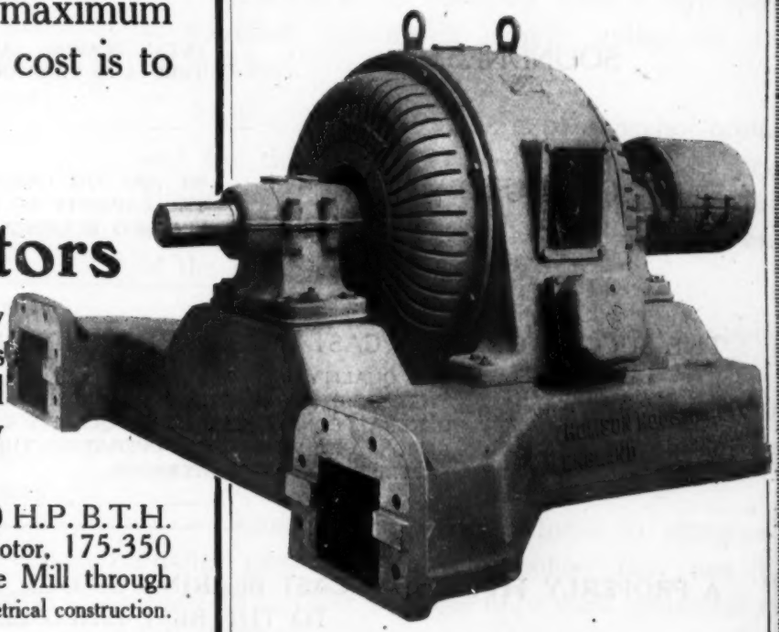

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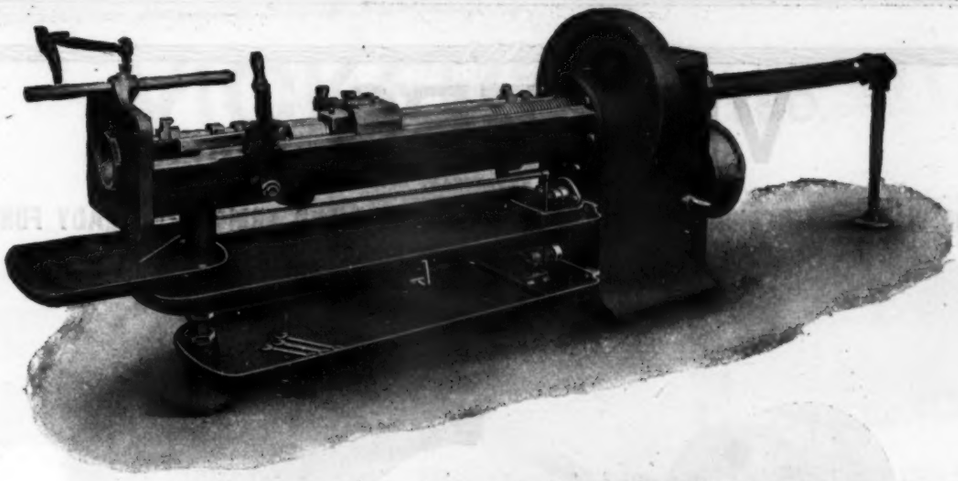

60 in. BROACHING MACHINE.

The Broaching Machine will cut keyways and finish square, rectangular or irregular shaped holes in less time than was previously required to set up the work on the slotting machine.

The methods employed in the machine shop must be constantly scrutinised, so that full advantage can be obtained from modern machines and practice. Competition demands that the maximum output of the right quality shall be produced at the minimum cost.

As an illustration, take the operation of cutting a keyway in a gear or bush. At one time this was universally recognised as a slotting job, but since the development of the Broaching Machine it is now possible to do this work much more economically. The Broaching Machine will finish square, rectangular, or irregular shaped holes in less time than was previously required to set up the work on a slotting machine.

The machine illustrated is of ample strength to deal with any work within its capacity.

The drive is obtained from a two-speed countershaft driving a single pulley on the driving box.

The draw screw nut is of phosphor-bronze and the thrust of the screw is taken on a large Hoffmann ball thrust bearing with spherical seating. A cover is furnished for the free end of the draw screw.

The flanged end of the draw head support which takes the work holding fixtures carries a removable projecting rod on which rests can be suspended for supporting the outer ends of long pieces of work.

Standard equipment includes oil pump and piping, one blank broach holder that can be bored to suit the broaches to be used, countershaft and spanners.

DIMENSIONS:

Stroke	**60 in.**	**Length of Nut on draw screw**	**10½ in.**
Diam. of draw screw	**3½ in.**	**Cutting speeds**	**3 ft. and 4 ft. per minute.**
Horse power required	**15.**		

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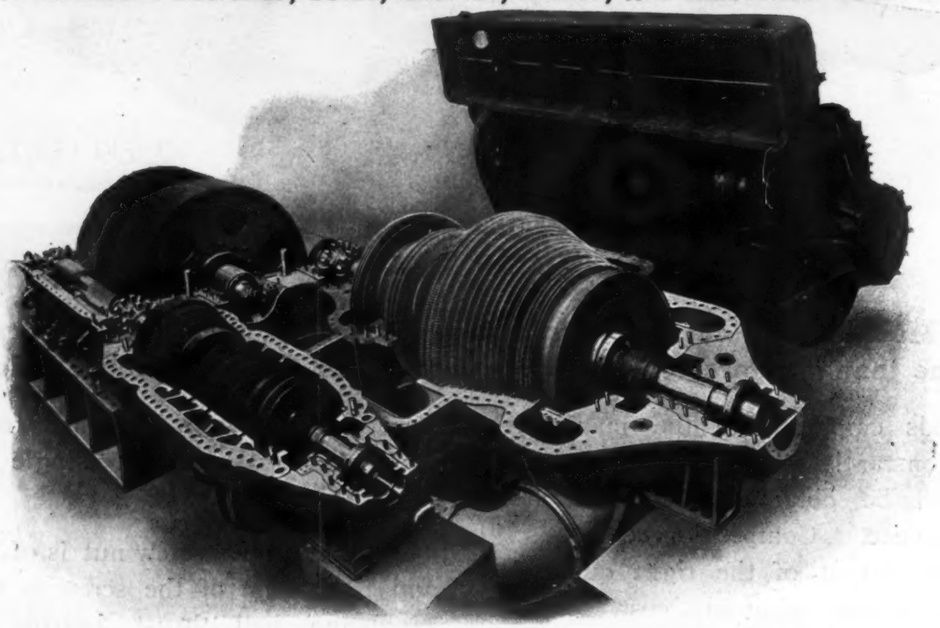

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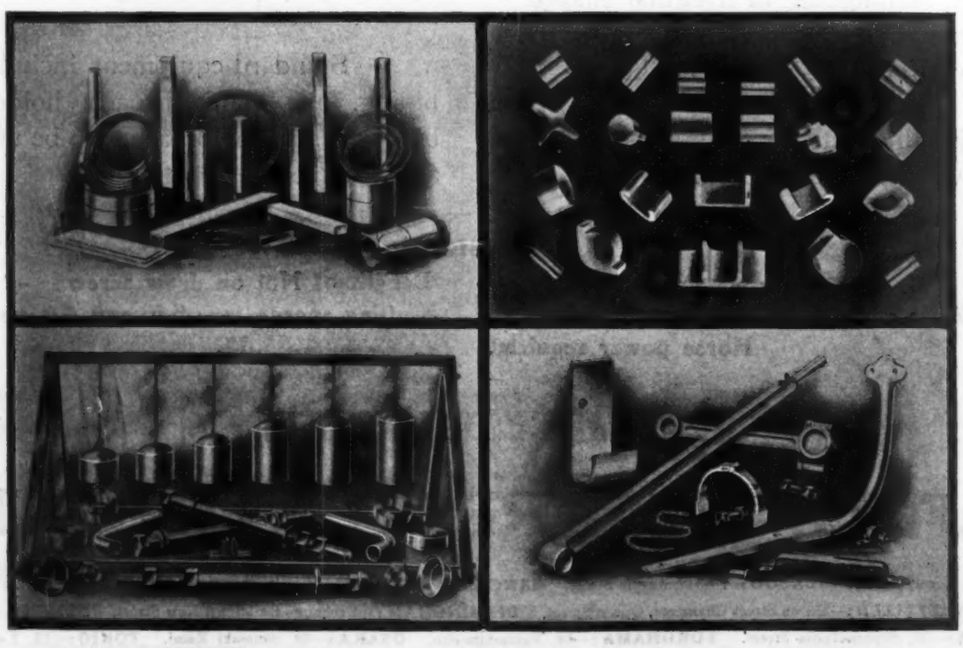

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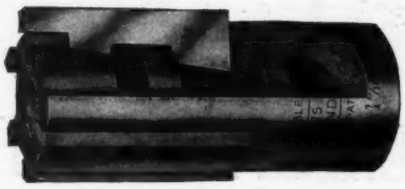

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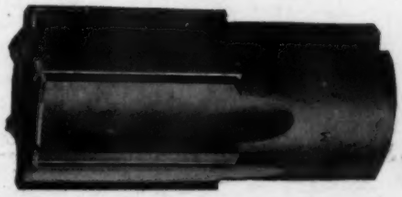

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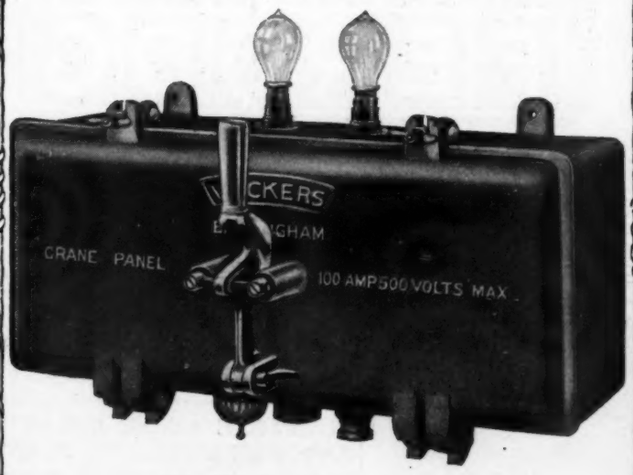

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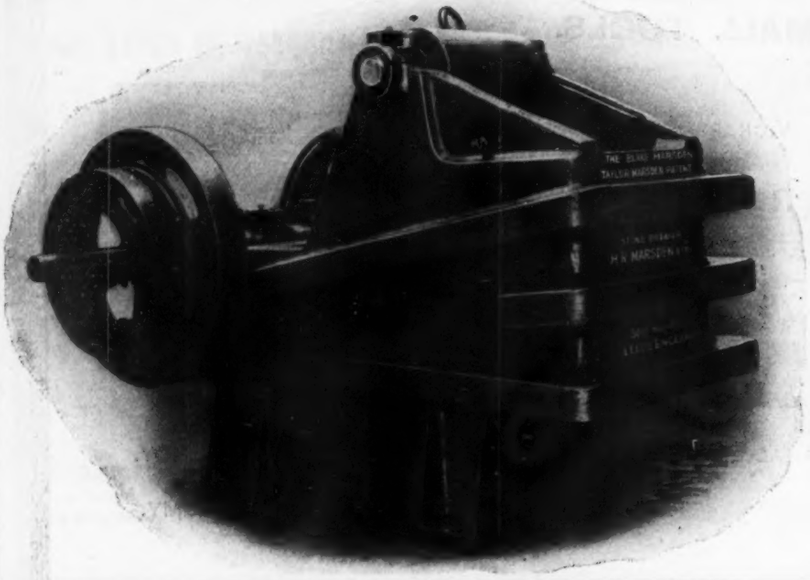

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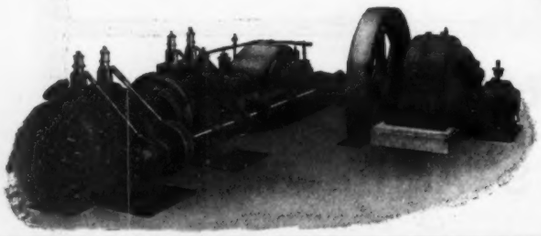

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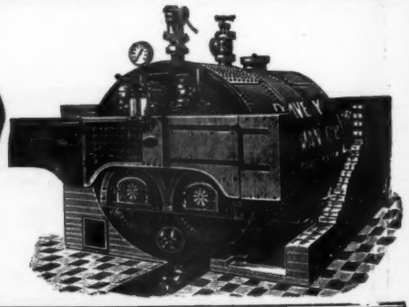

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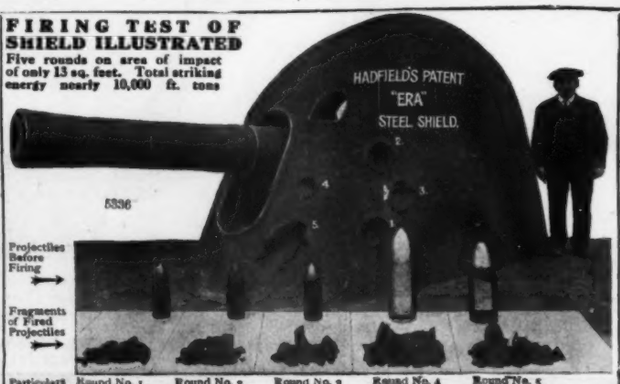

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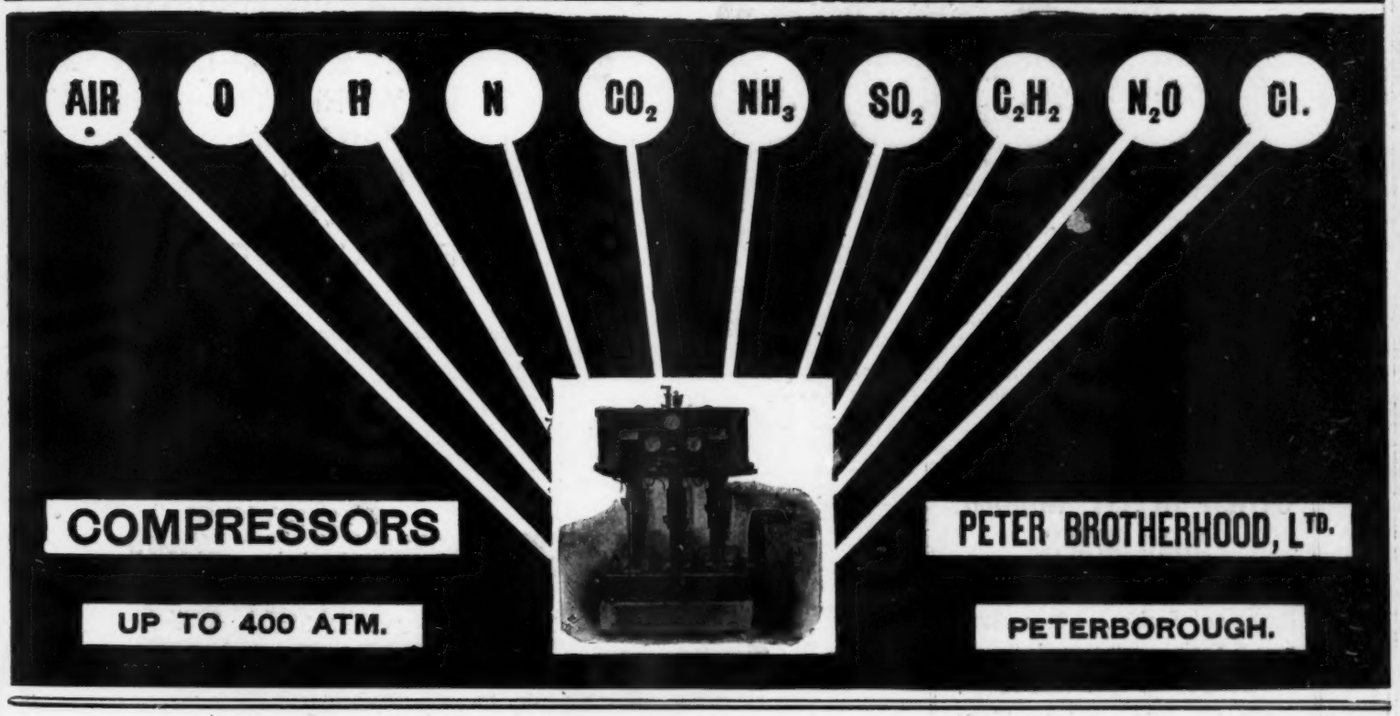

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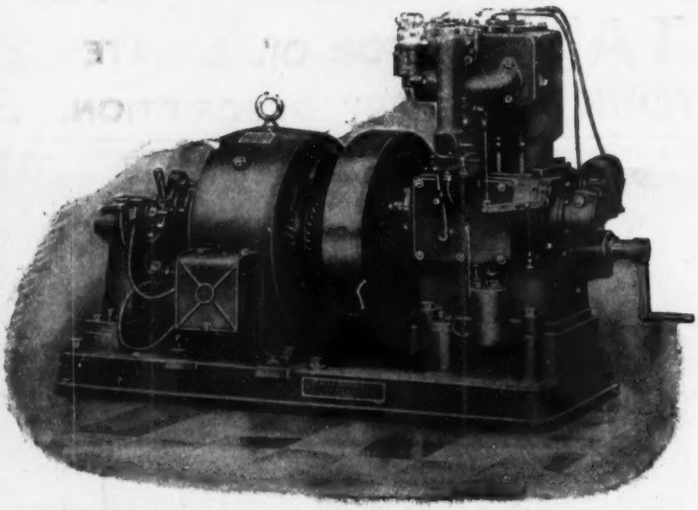

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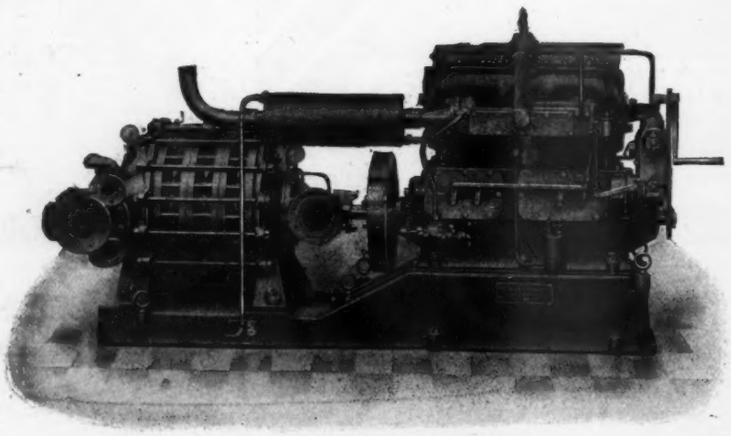

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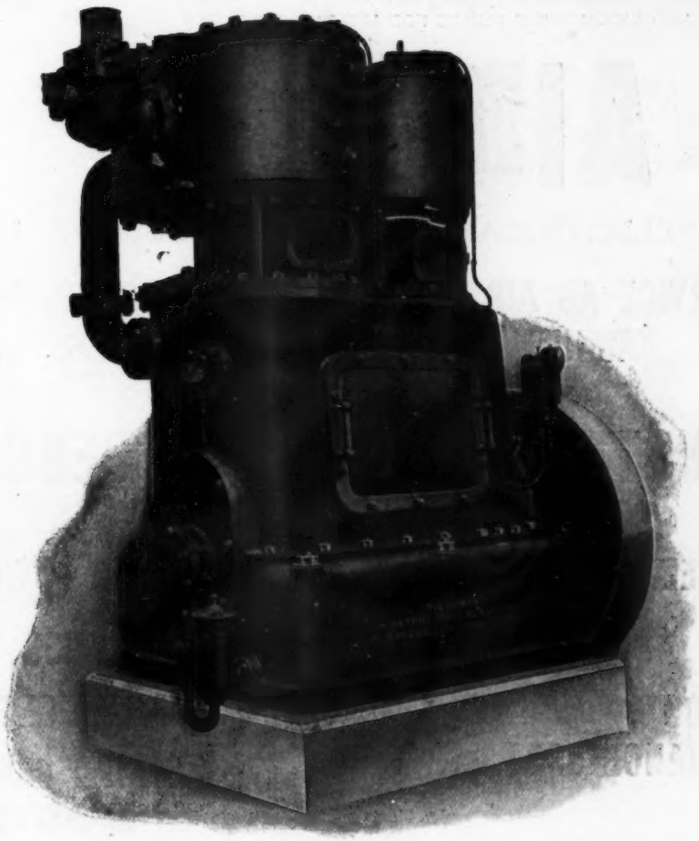

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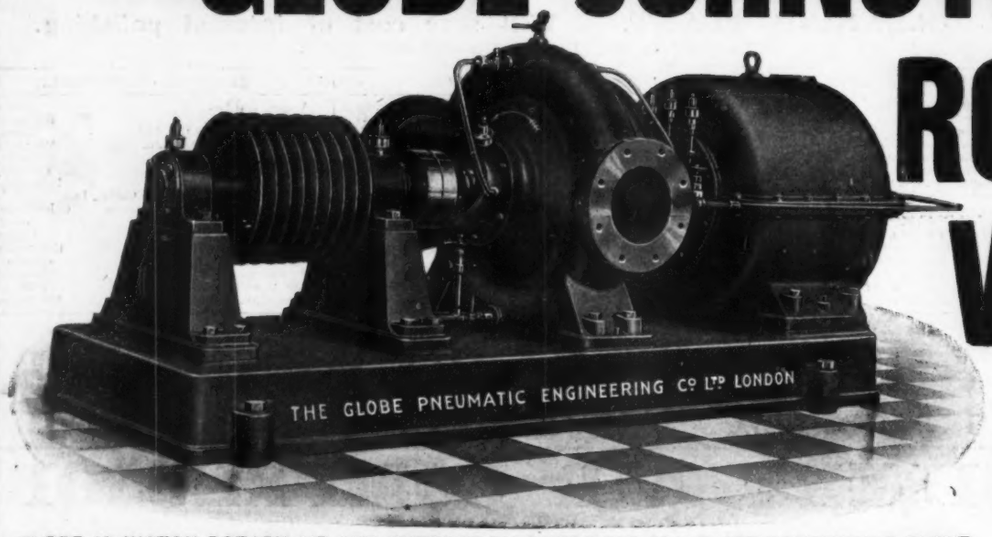

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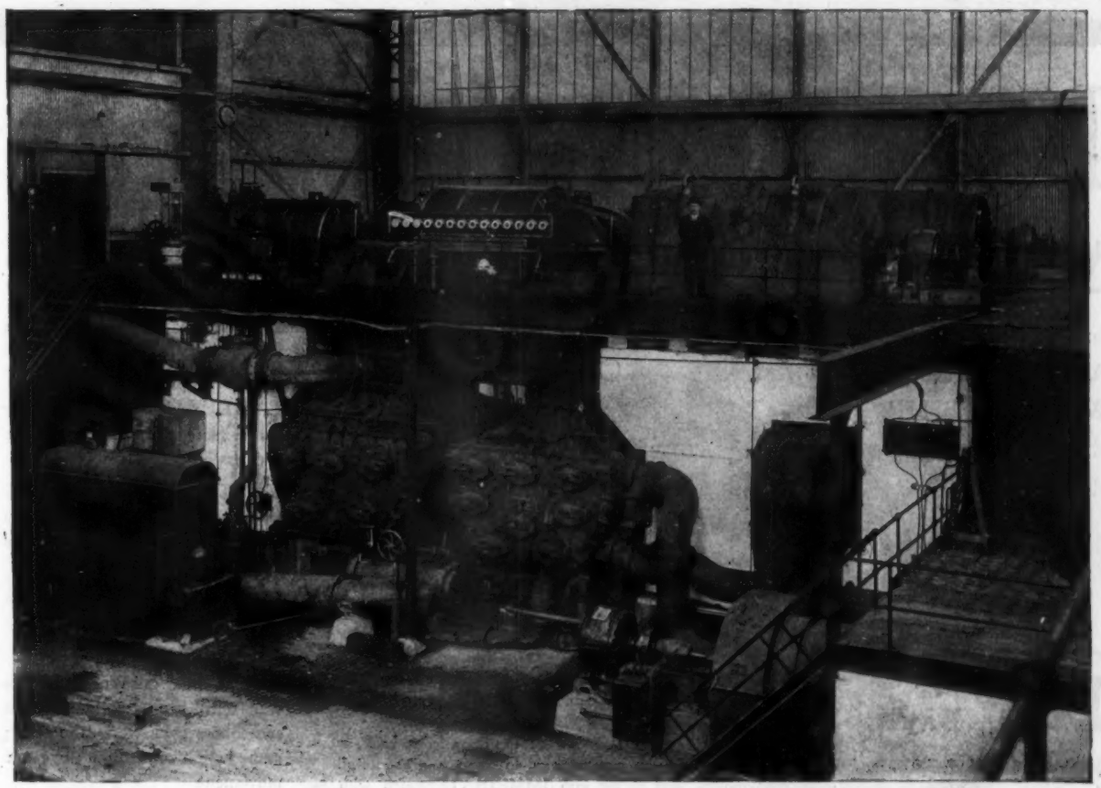

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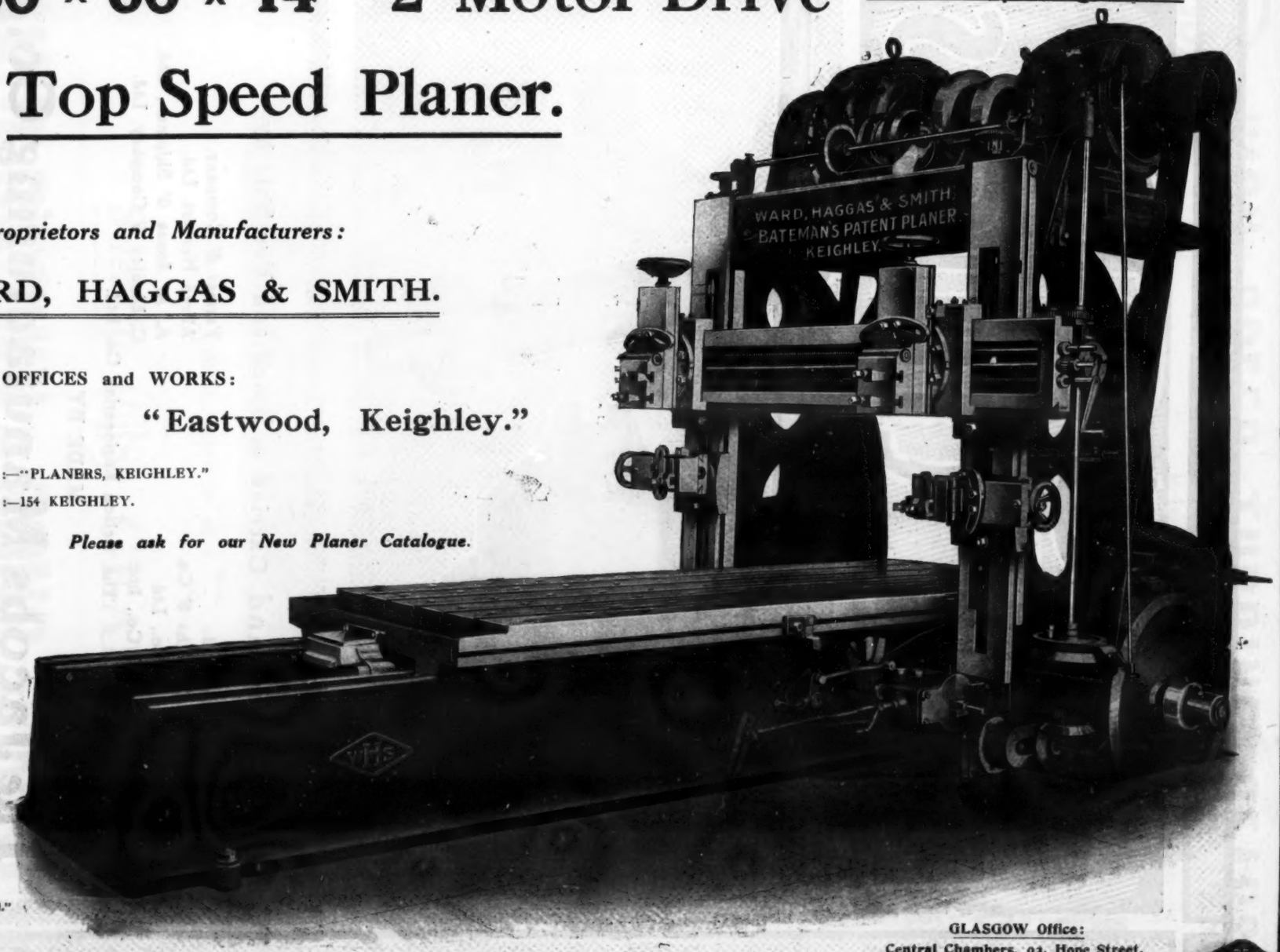

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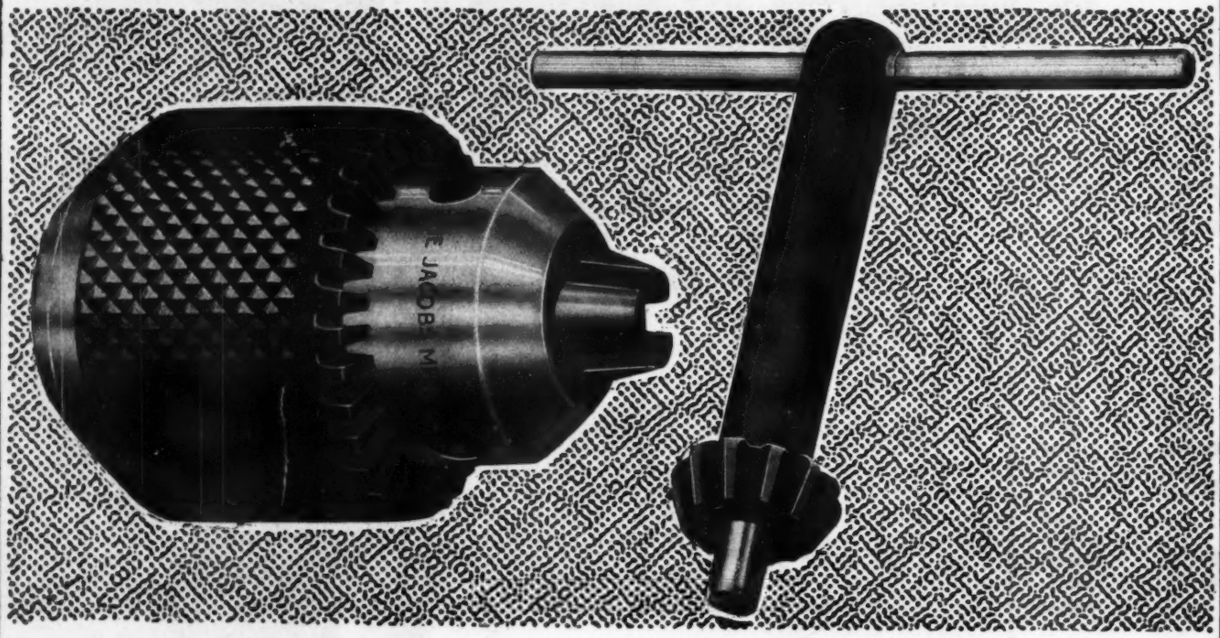

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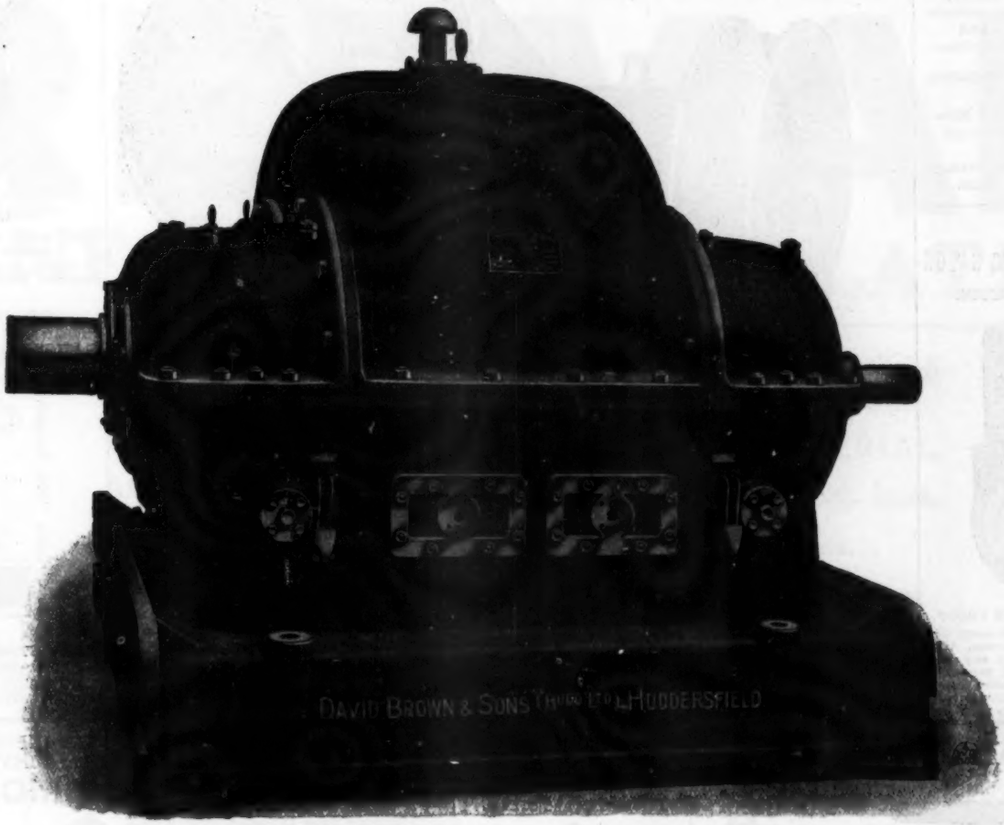

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Fig. 1770.—THE VALVE FOR GENERAL PURPOSES.

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2381.—Section View.

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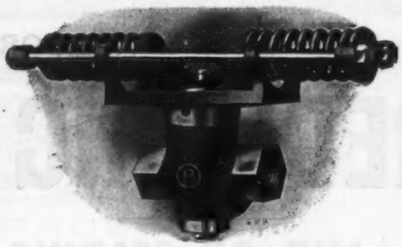

Fig. 1929.—HYDRAULIC REDUCING VALVE.
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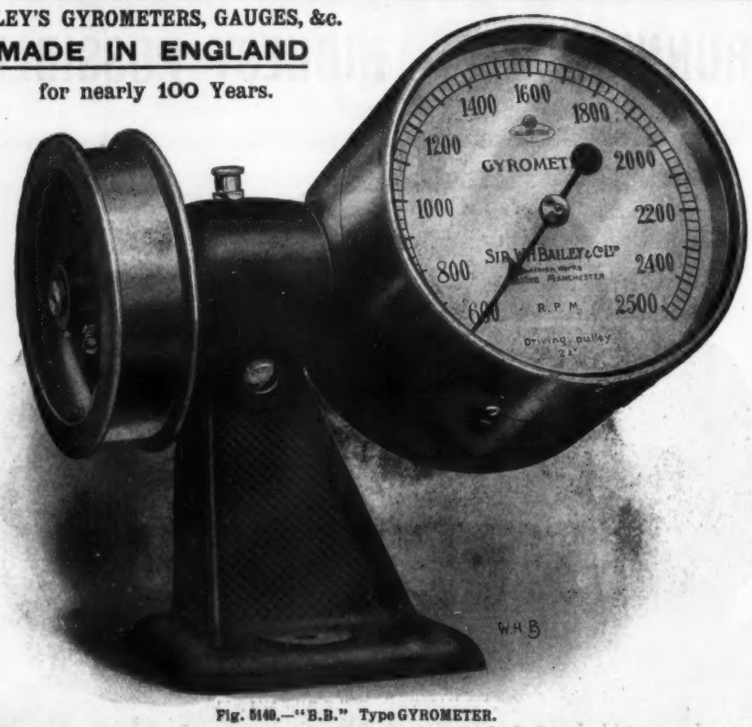

Fig. 3140.—"B.B." Type GYROMETER.

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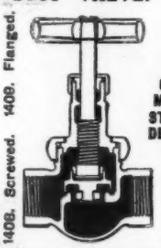

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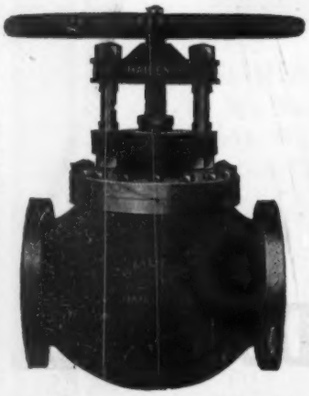

Fig. 1432—Iron. Fig. 1897—Steel.

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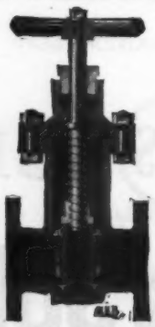

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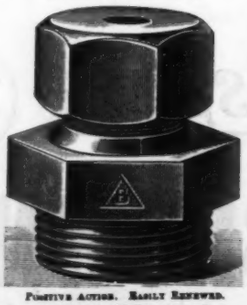

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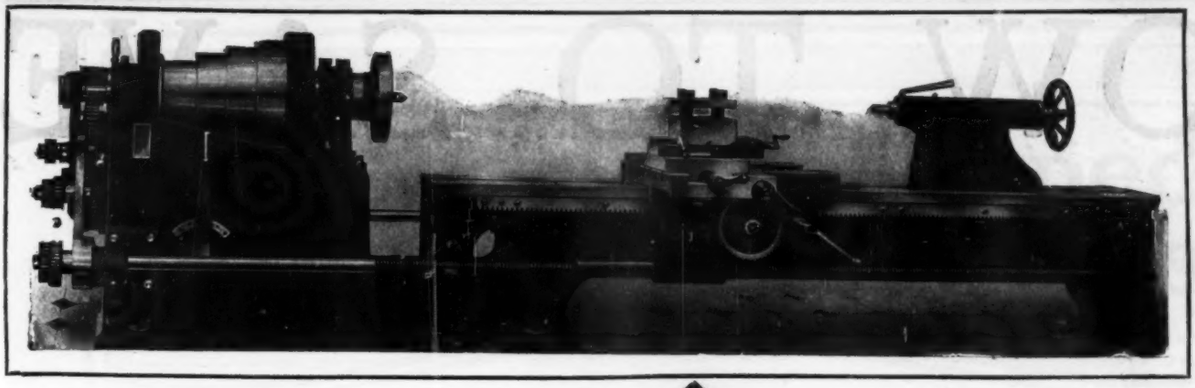

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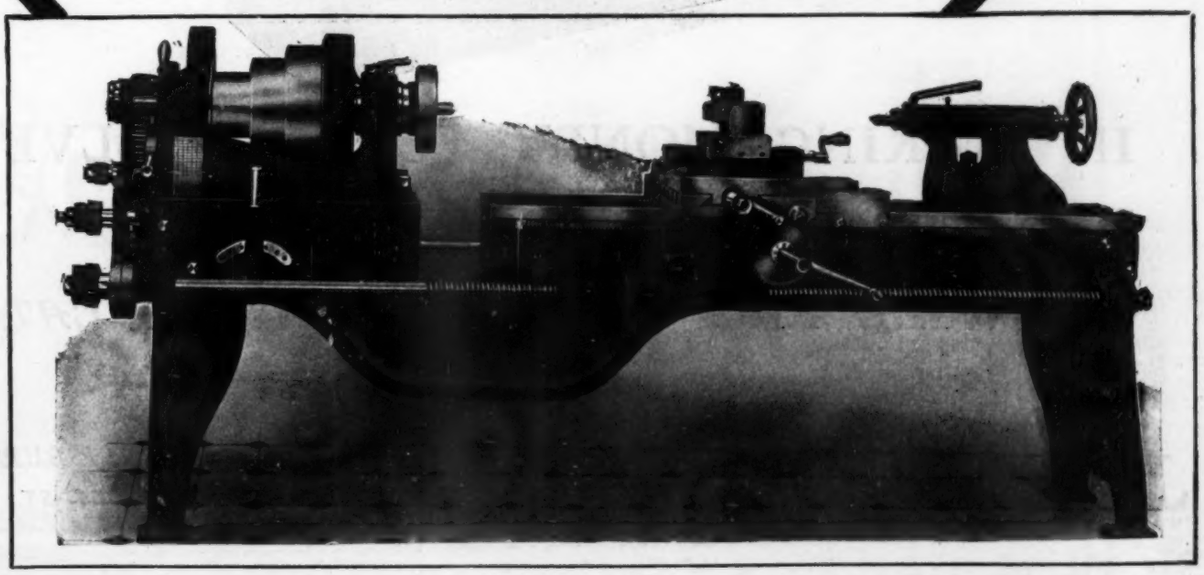

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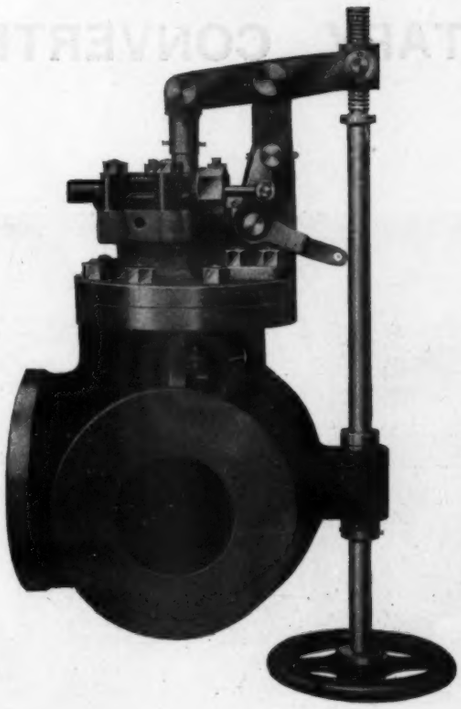

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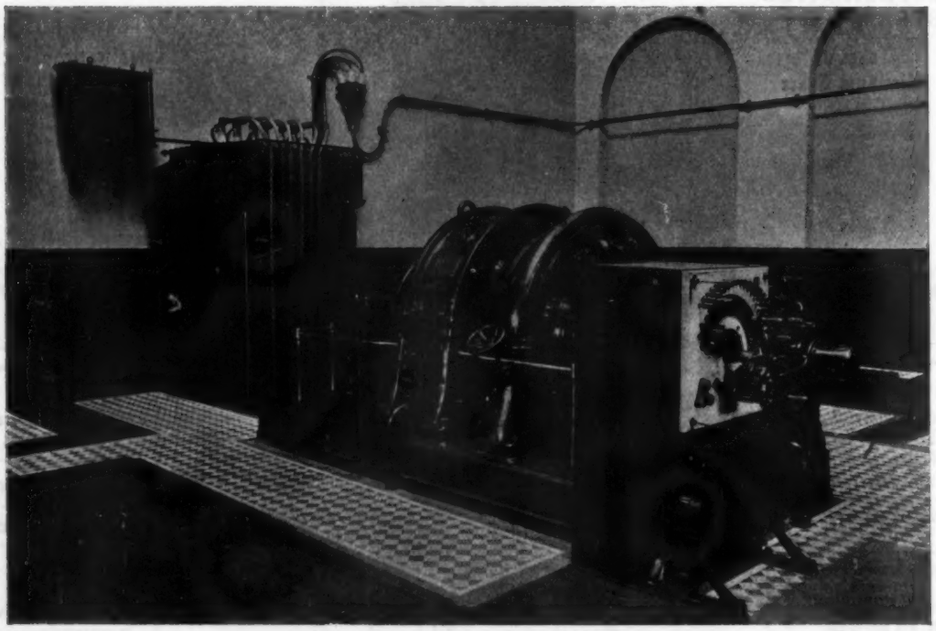

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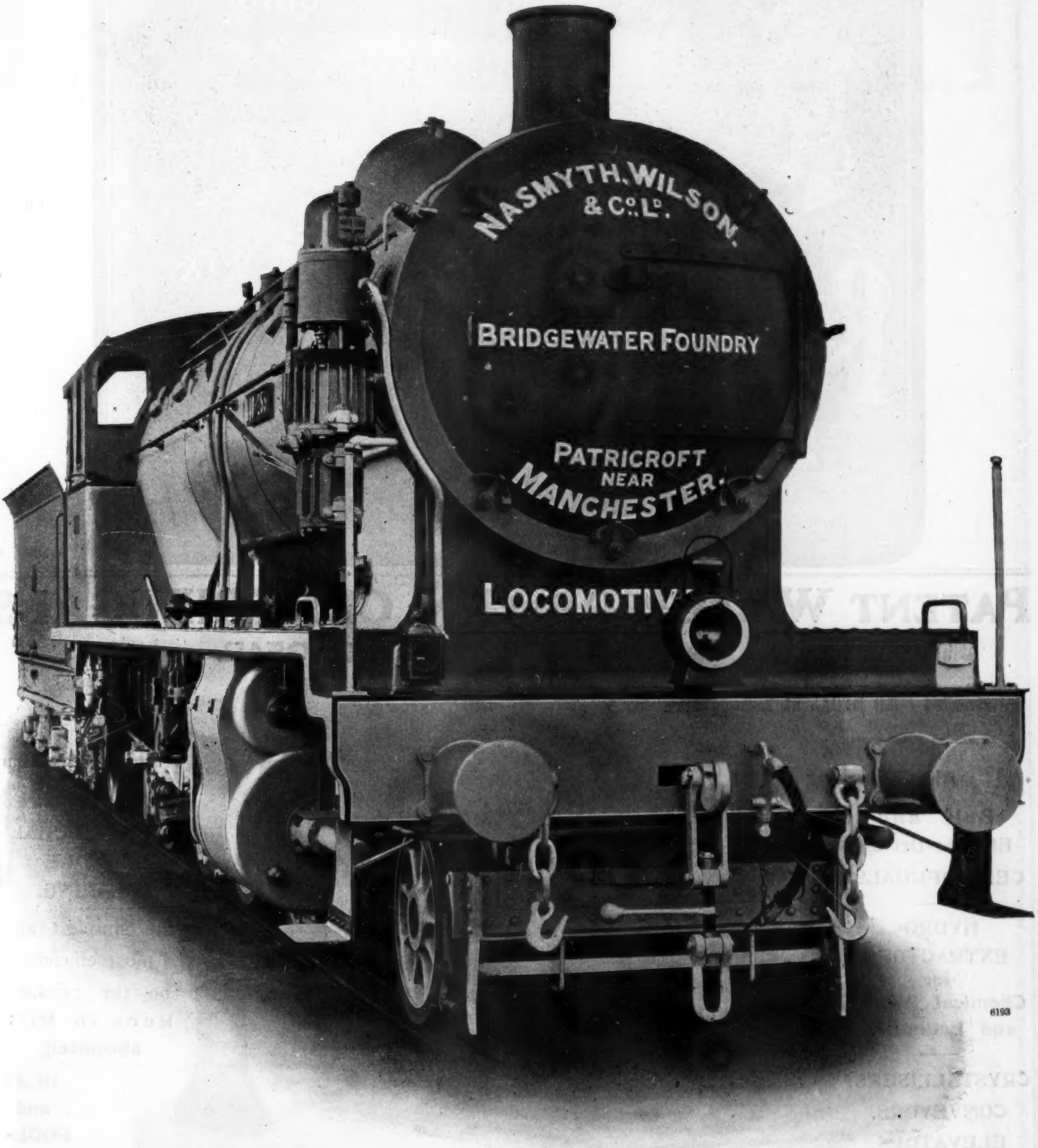
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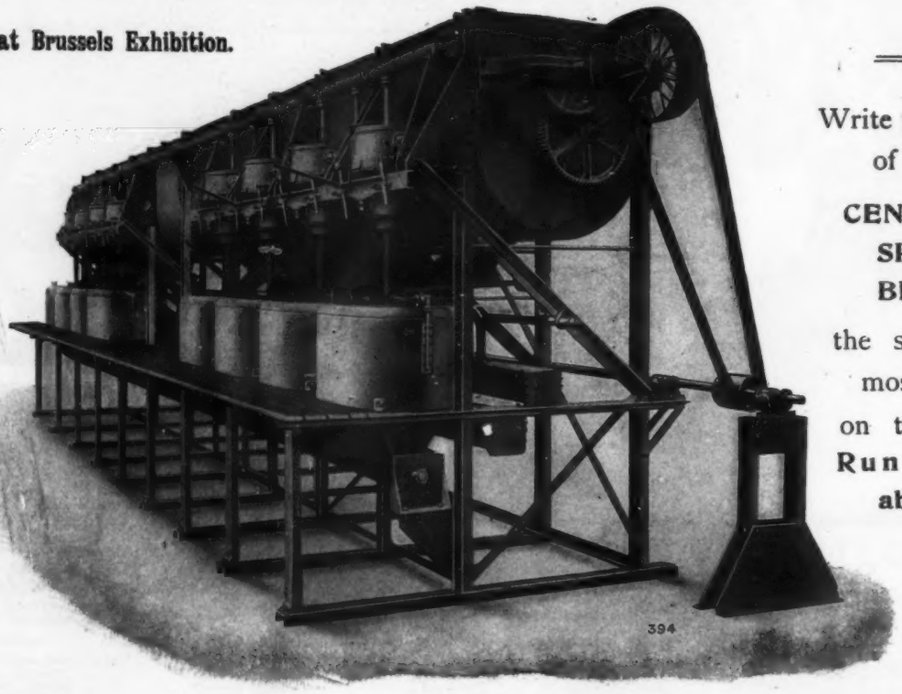

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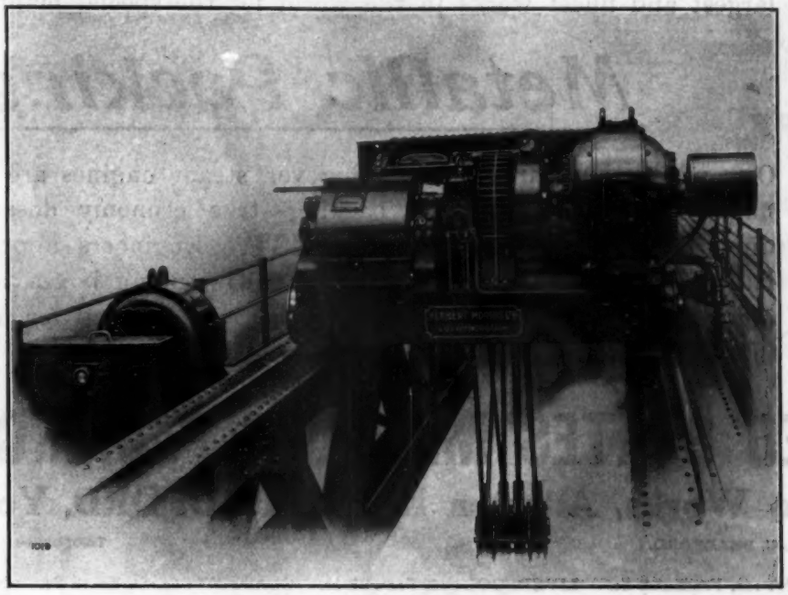

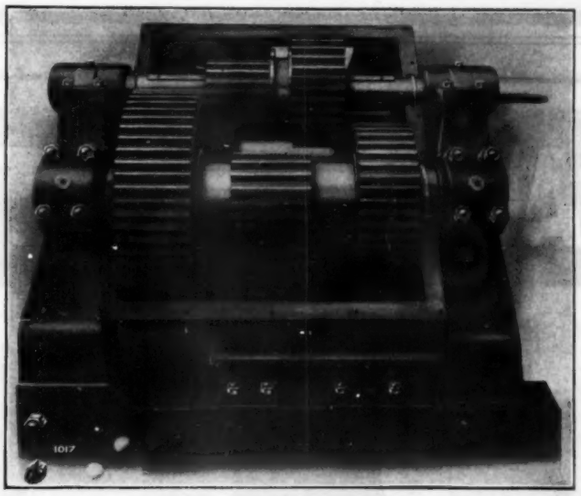

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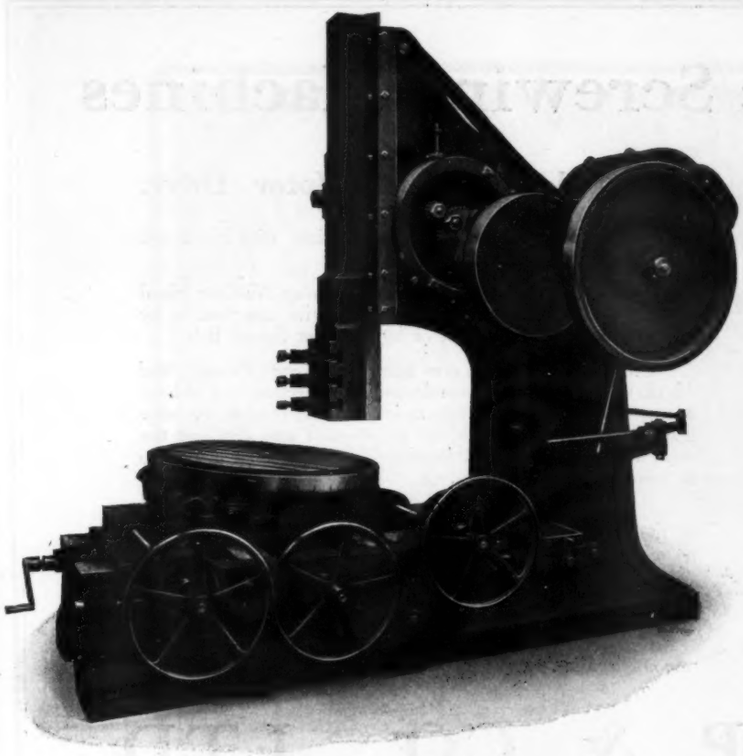

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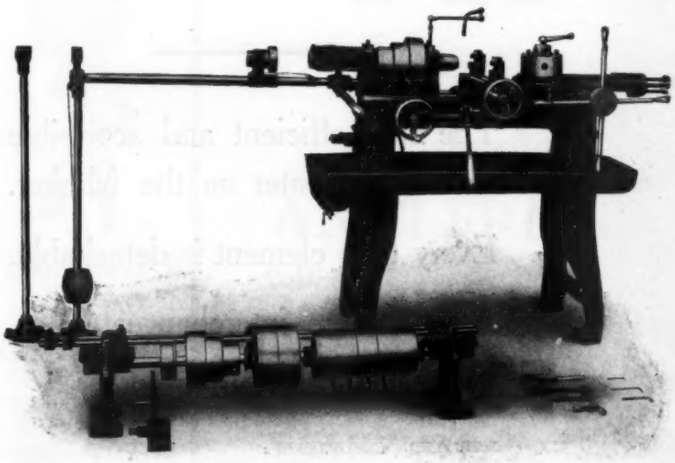

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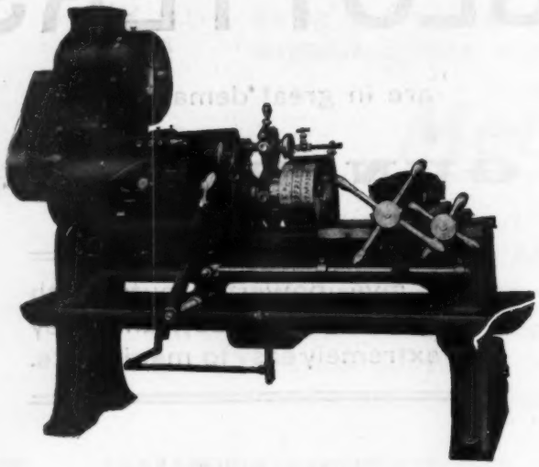

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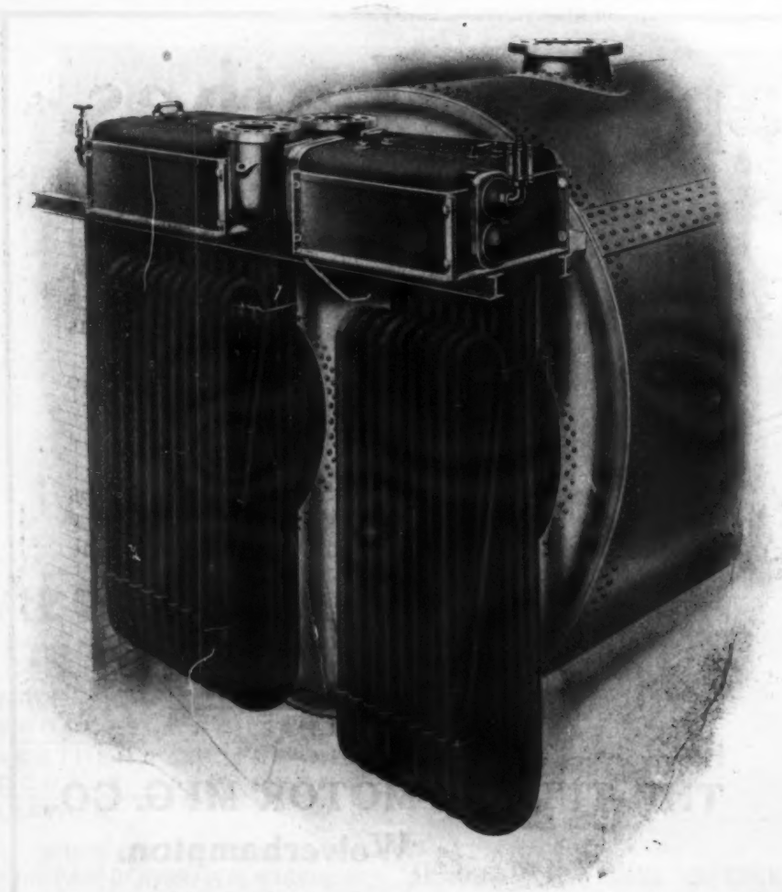

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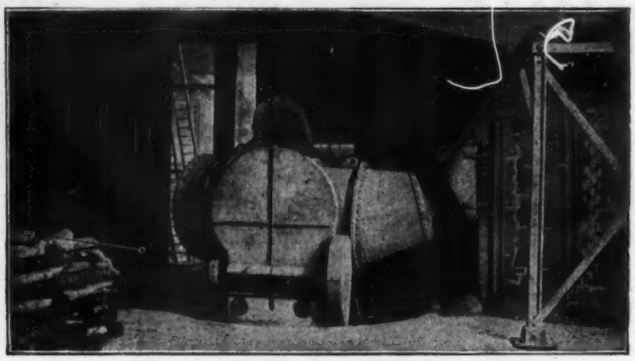

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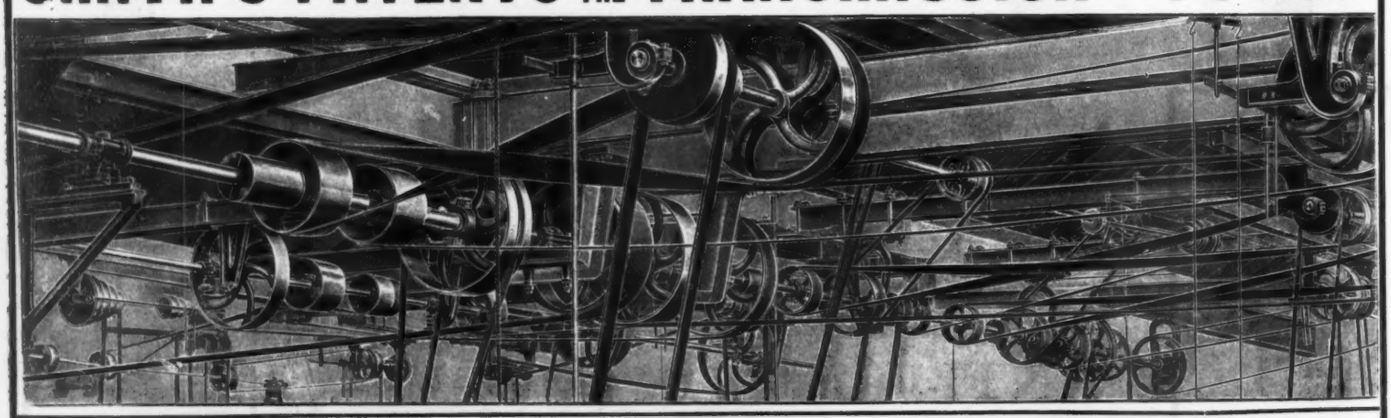

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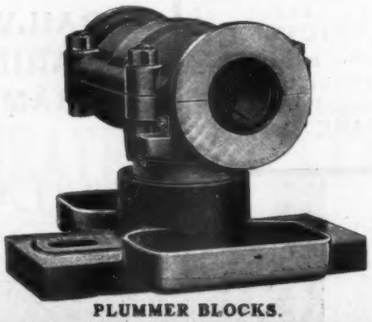

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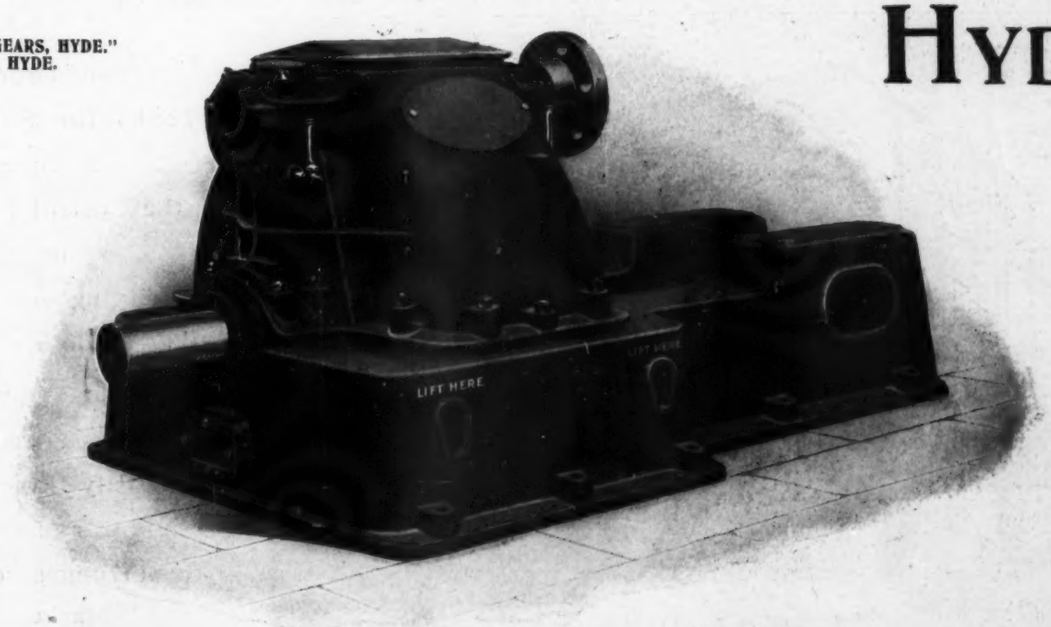

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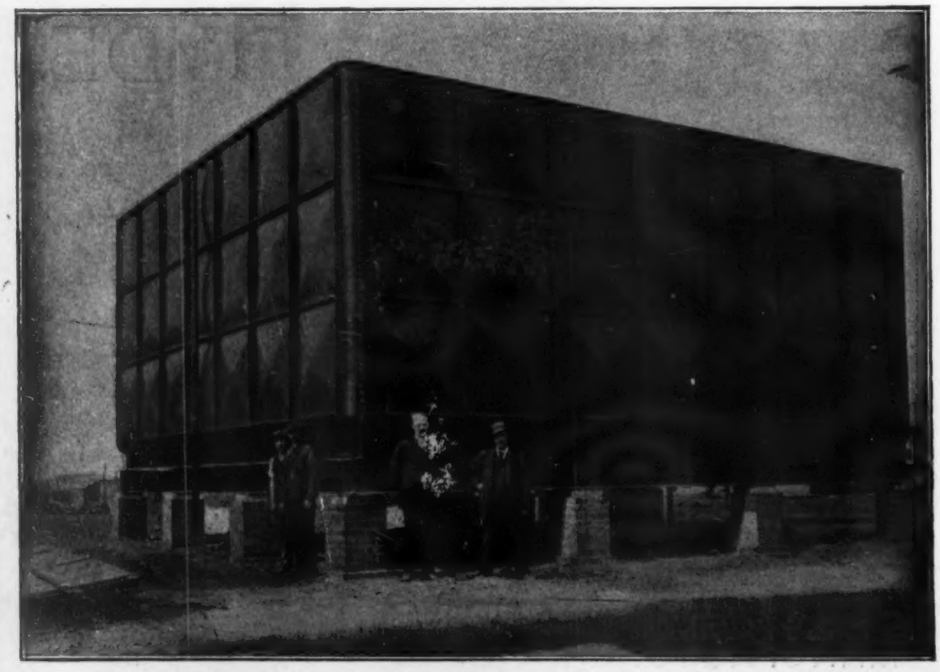

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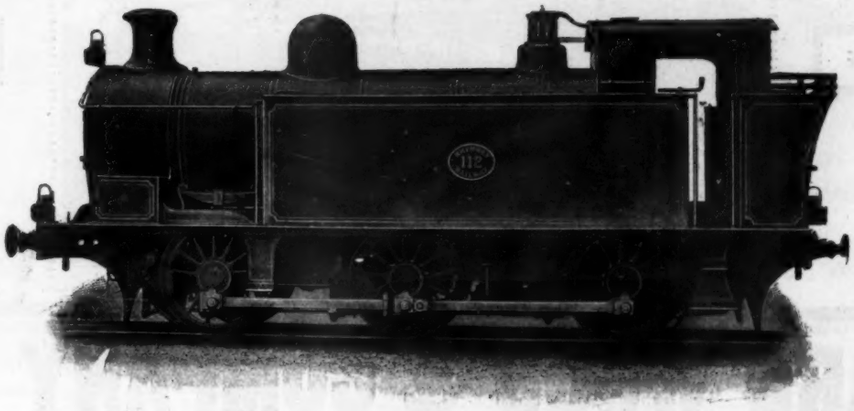

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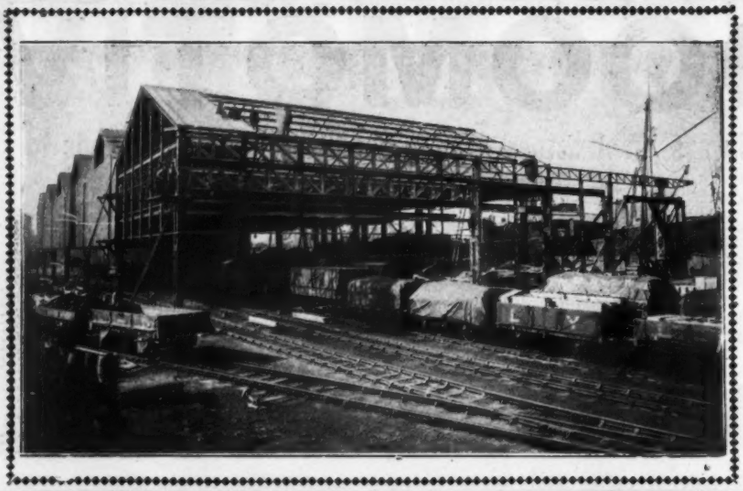

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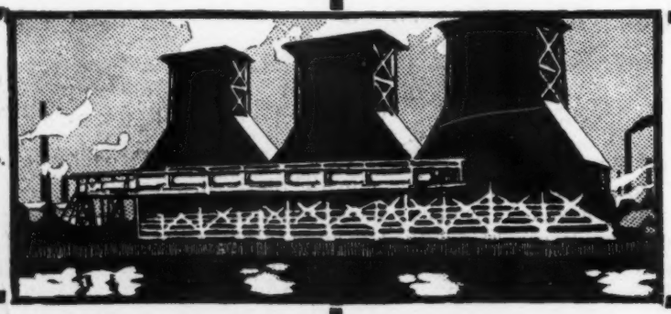

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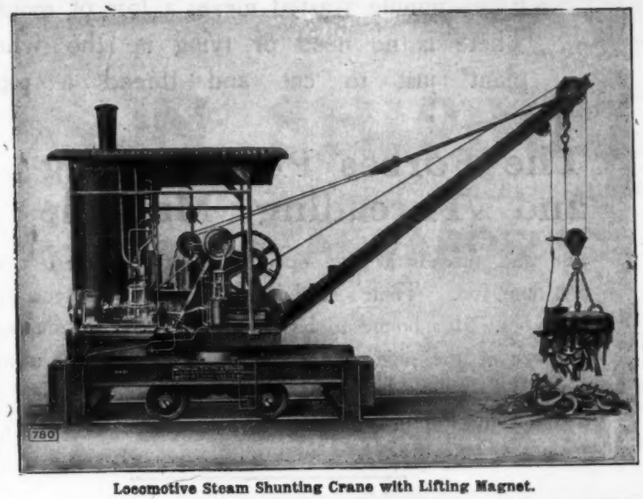

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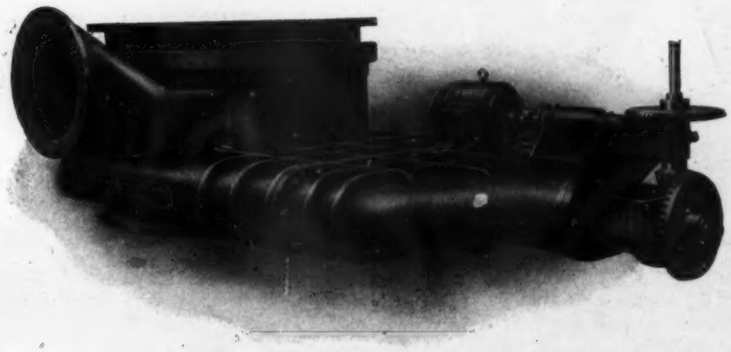

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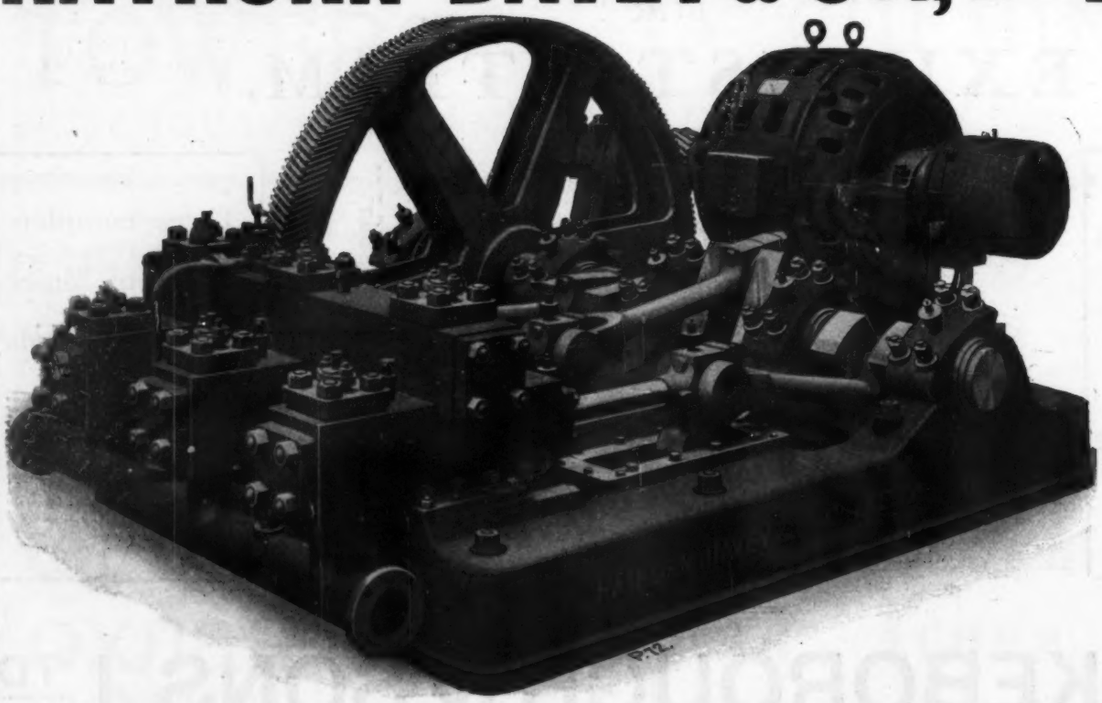

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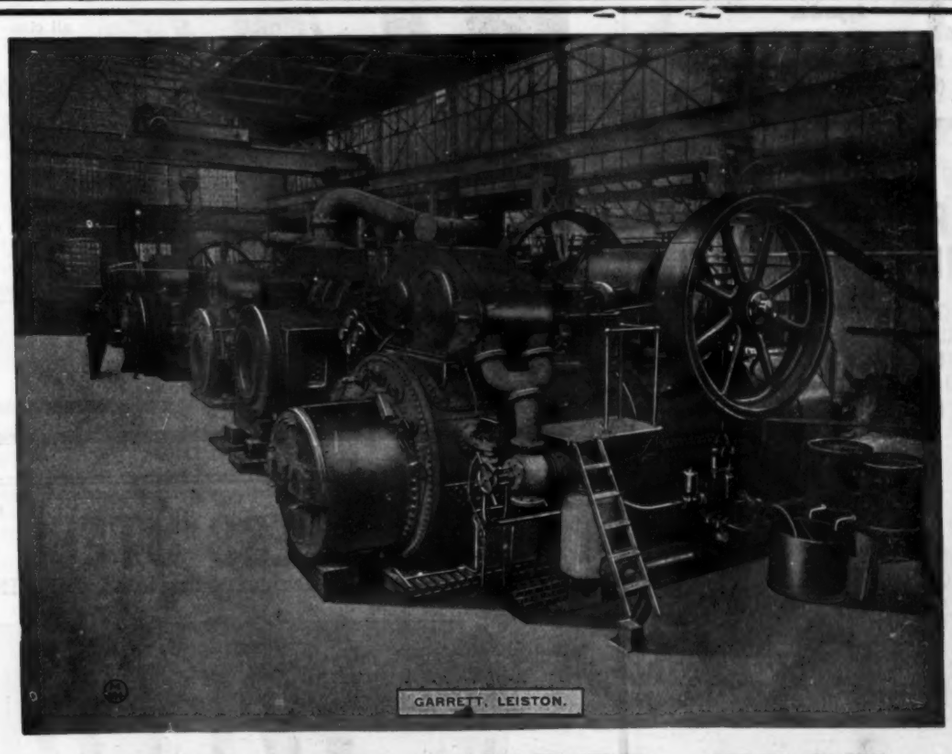

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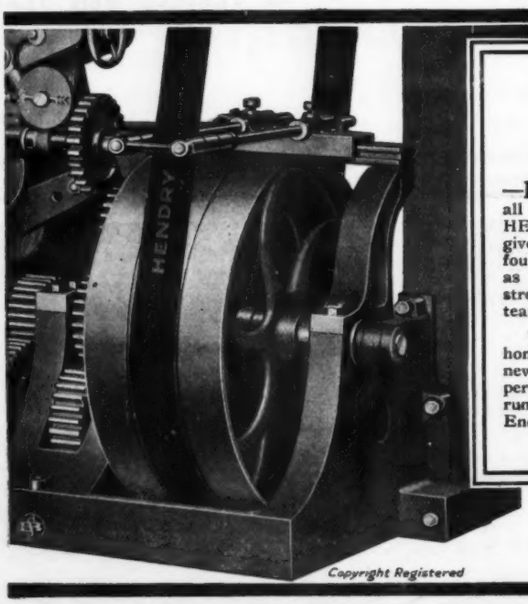

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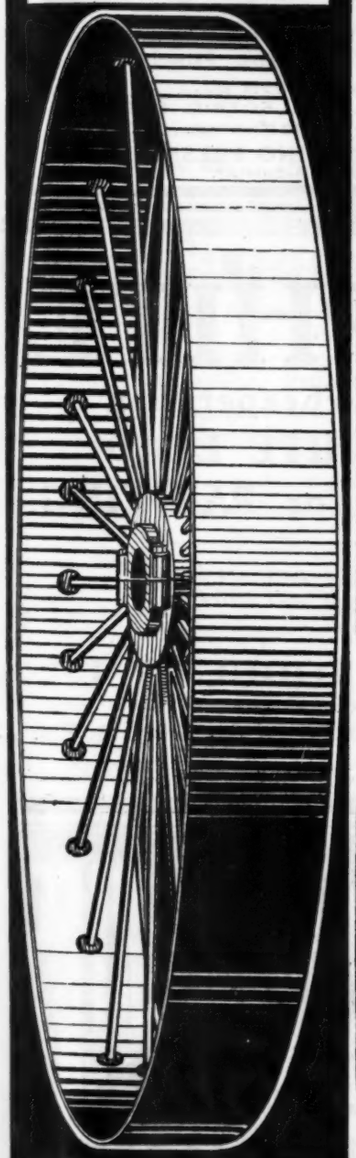

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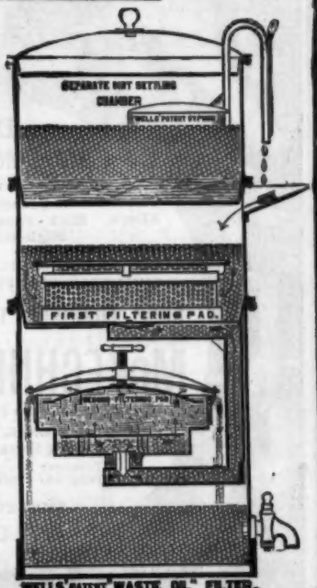

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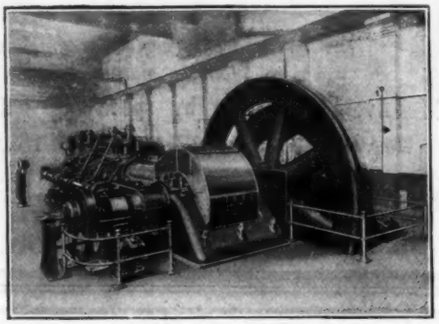

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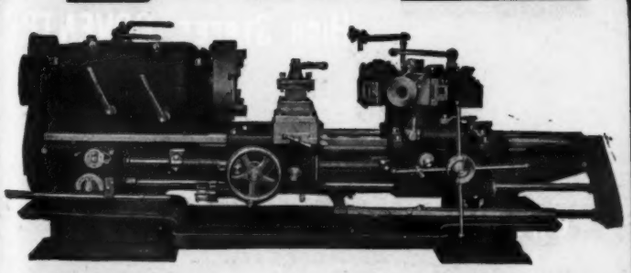

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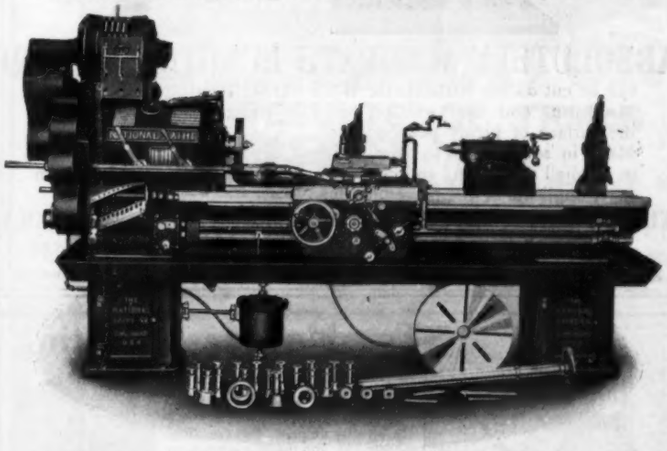

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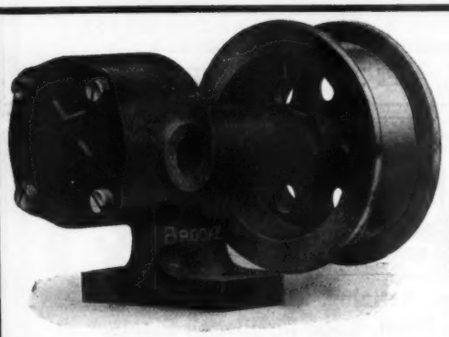

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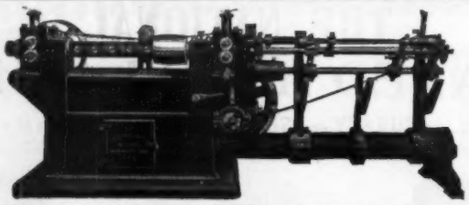

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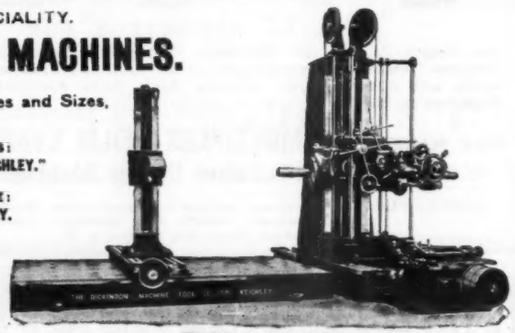

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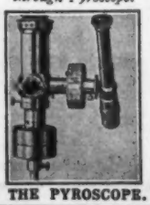

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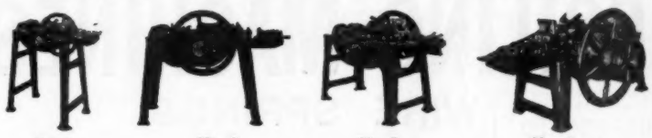

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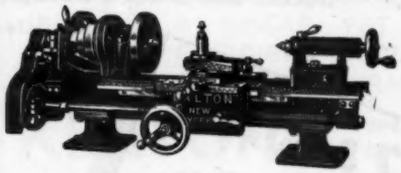

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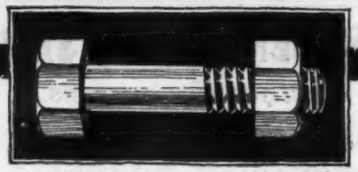

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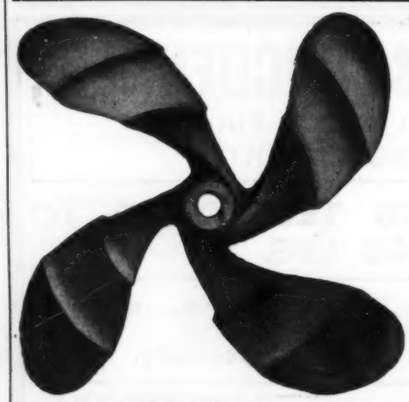

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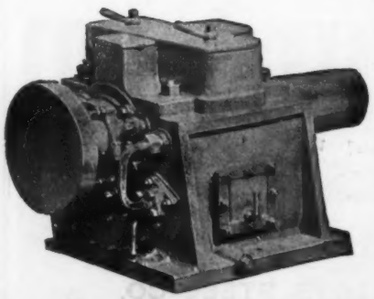

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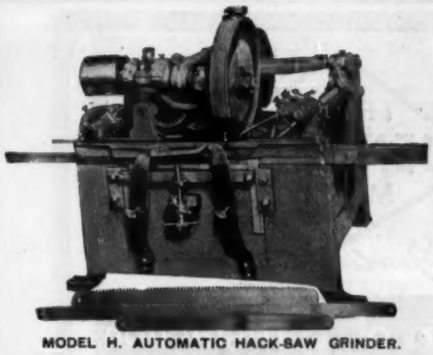
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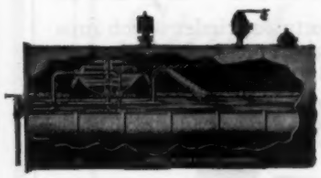

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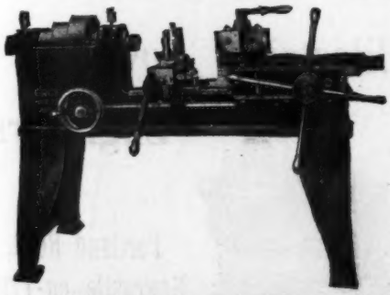
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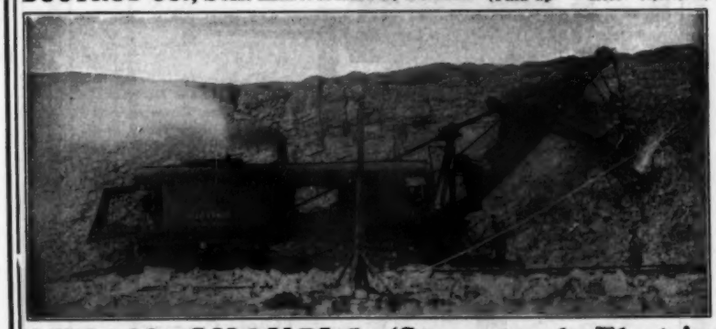

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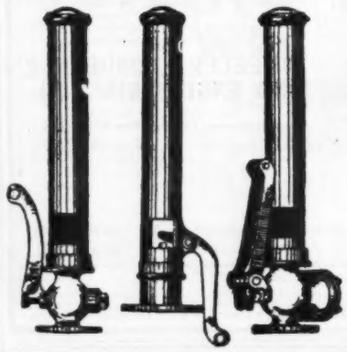

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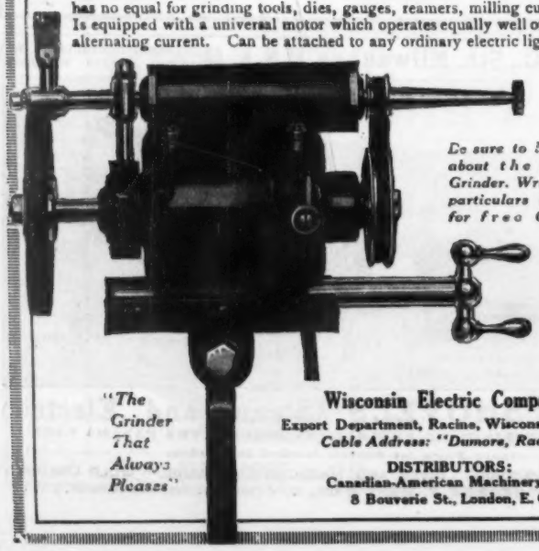

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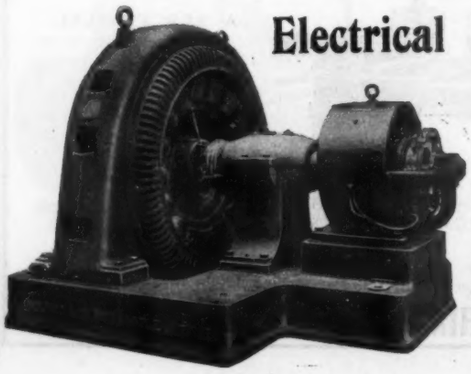

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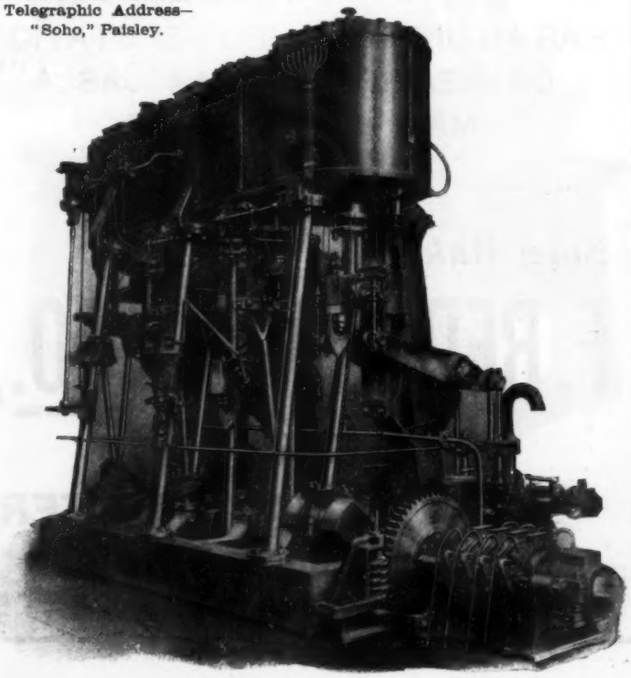

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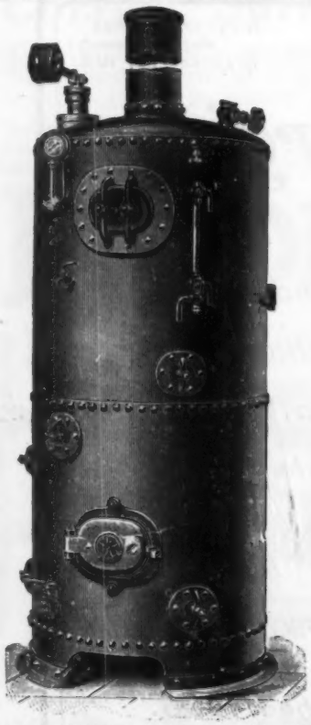

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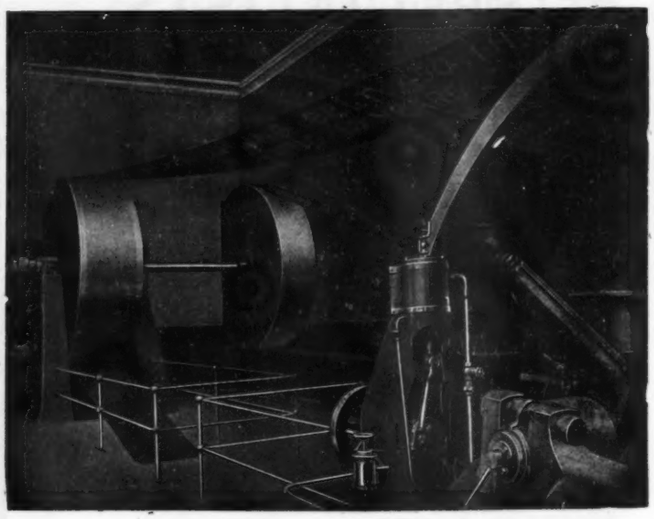

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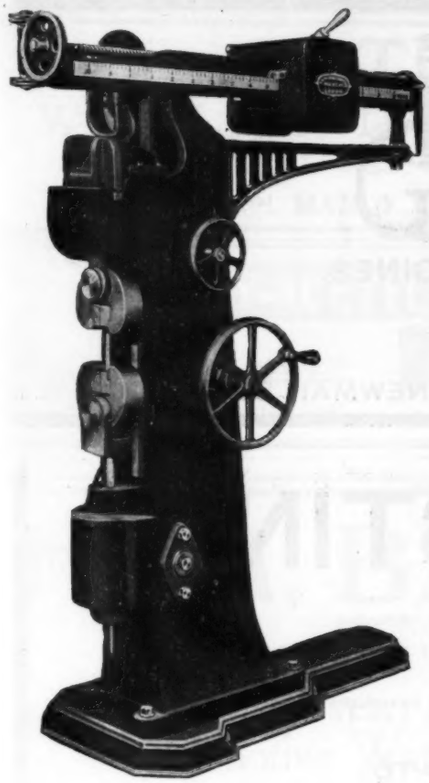

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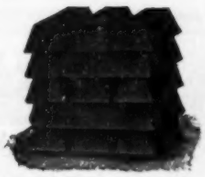

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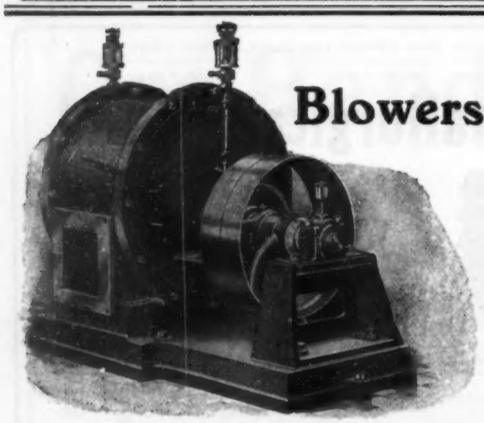

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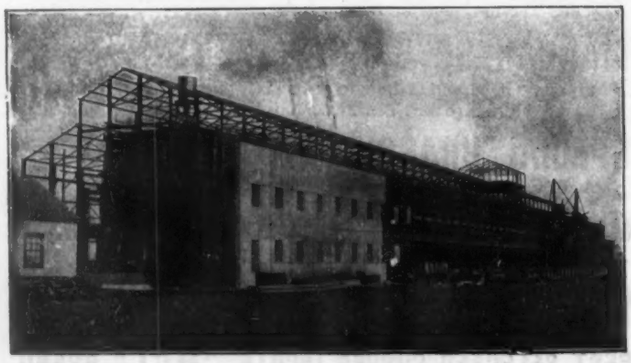

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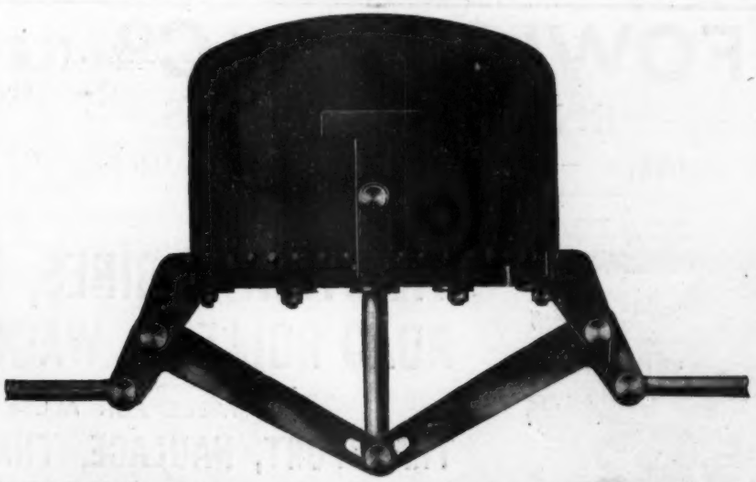

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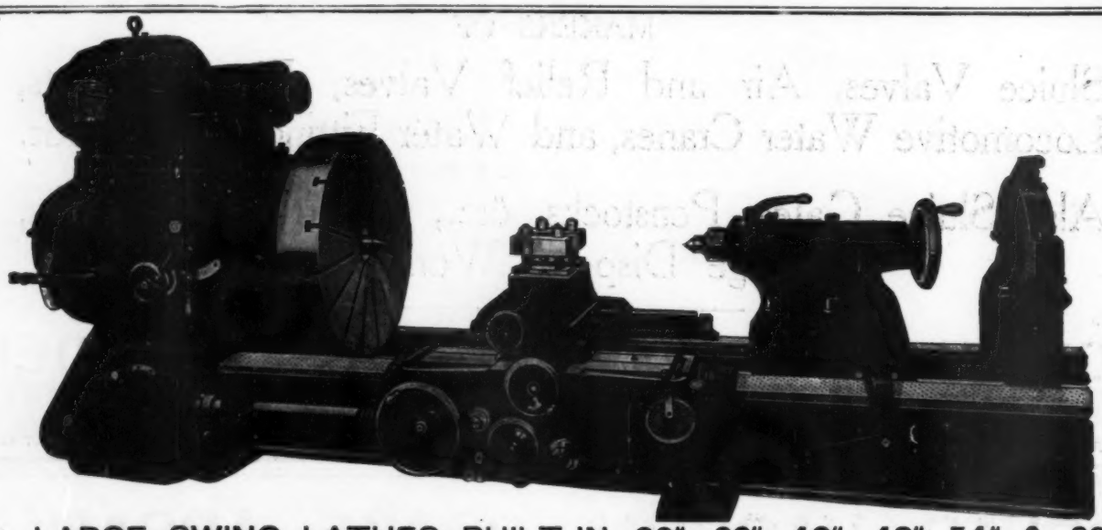

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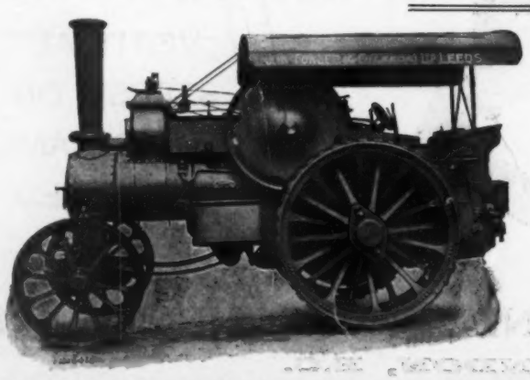

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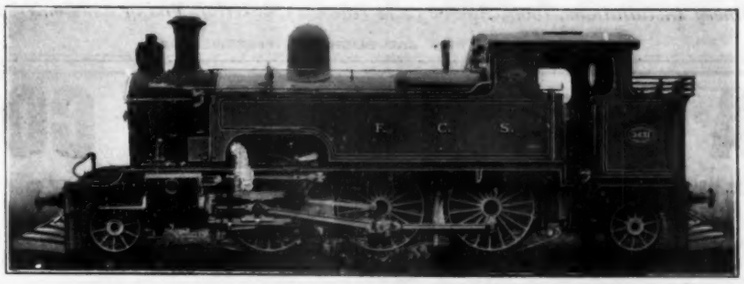

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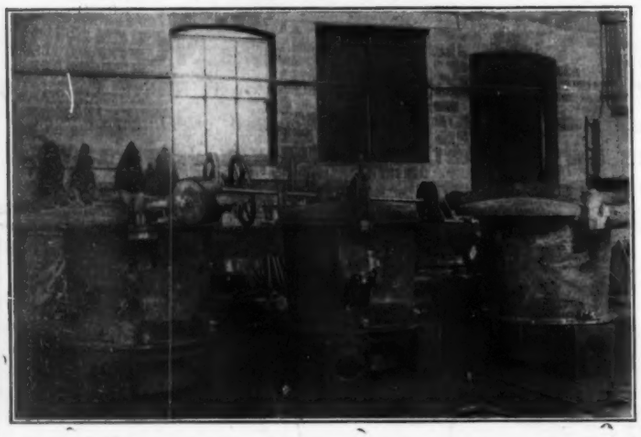

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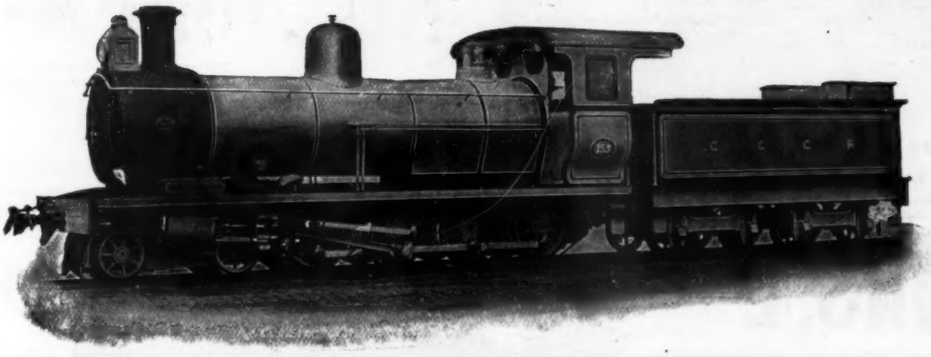

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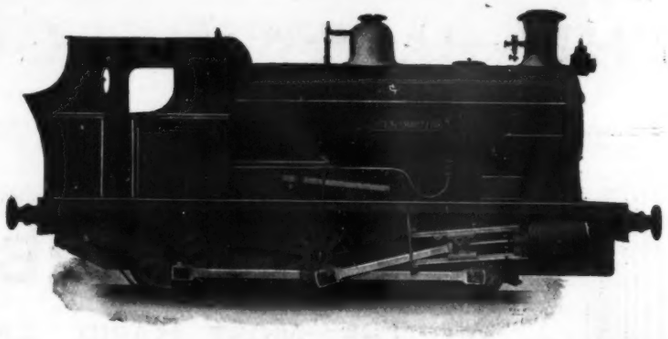

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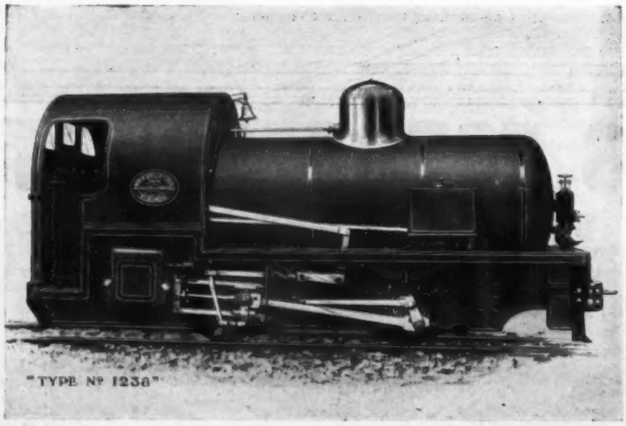
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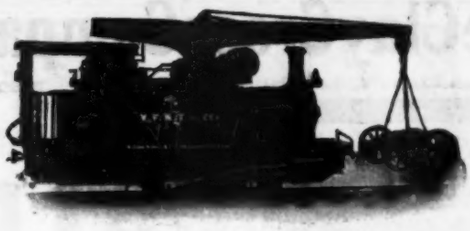

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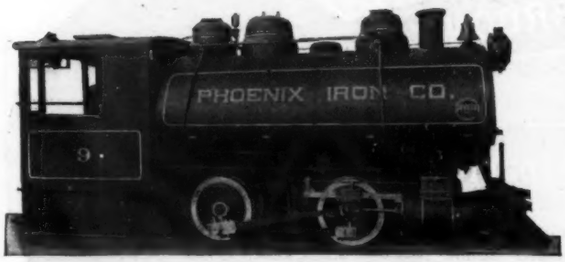

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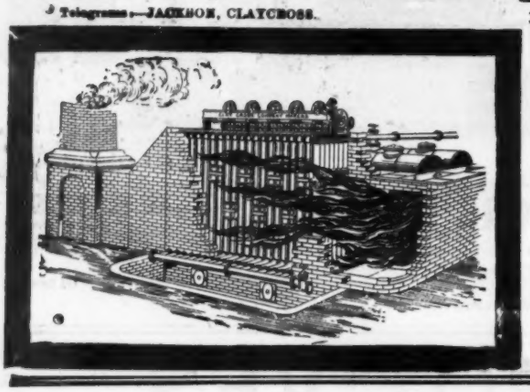

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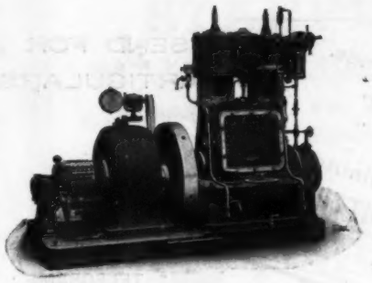

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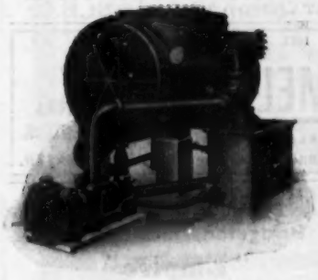

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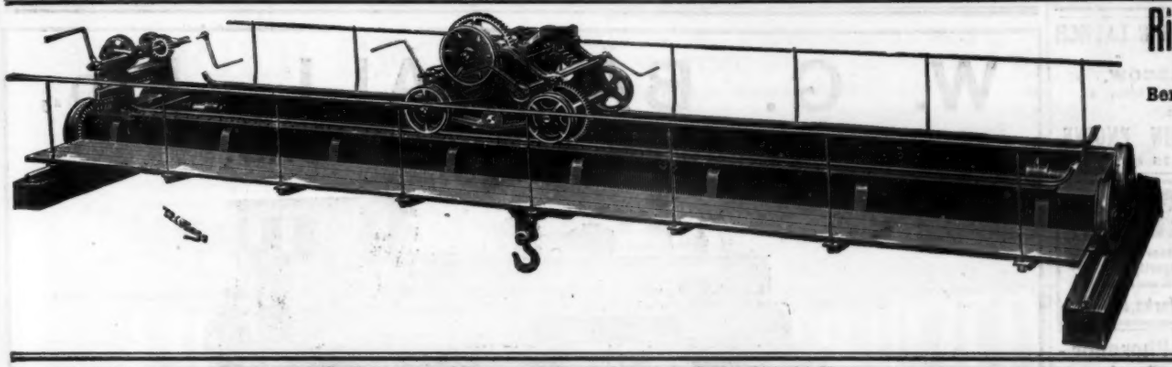

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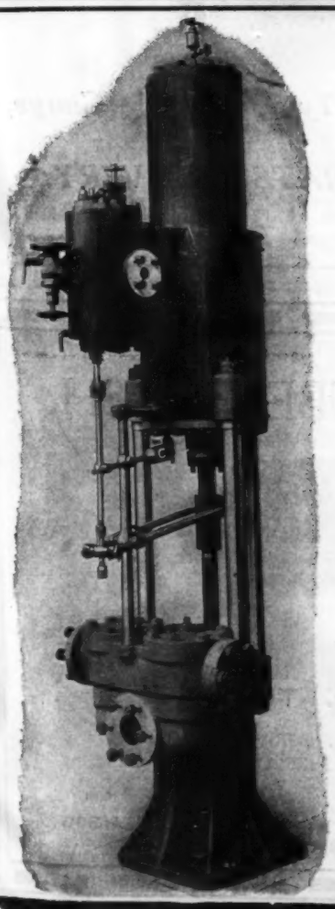

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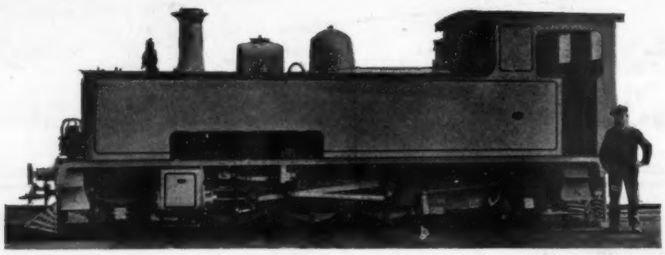

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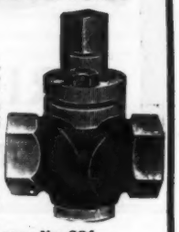

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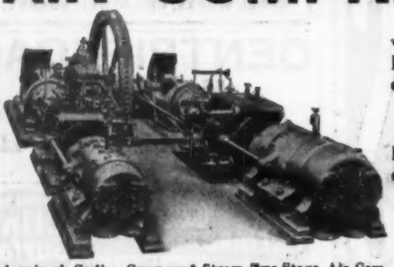

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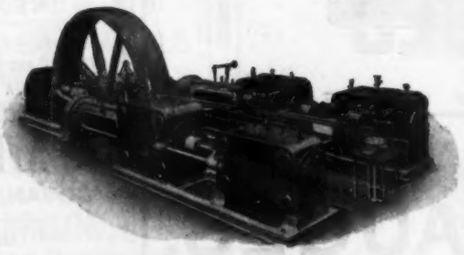

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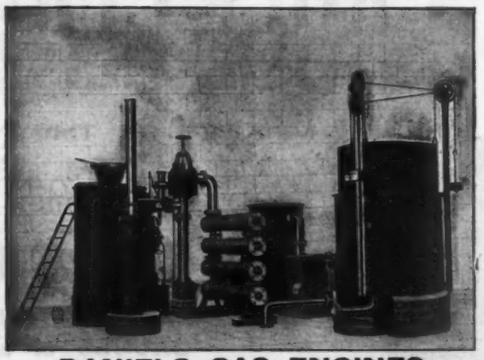

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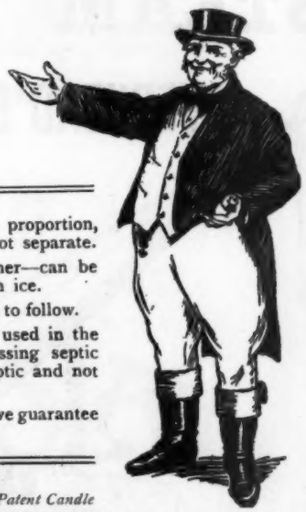

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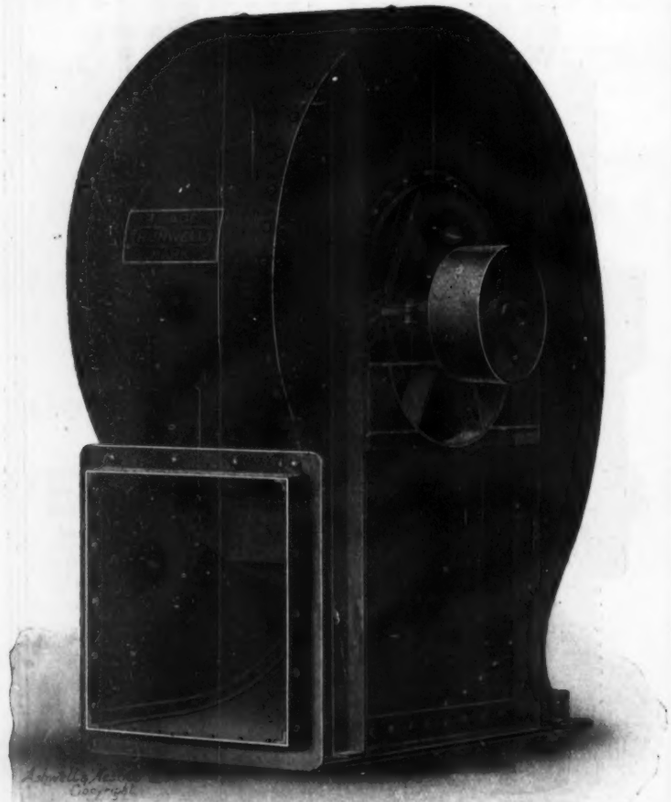

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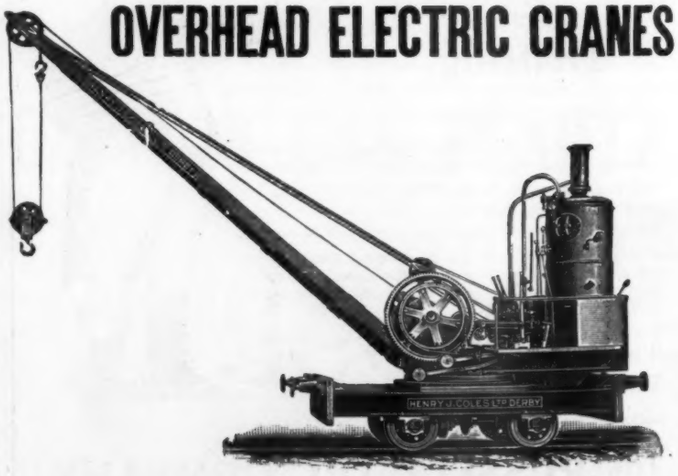

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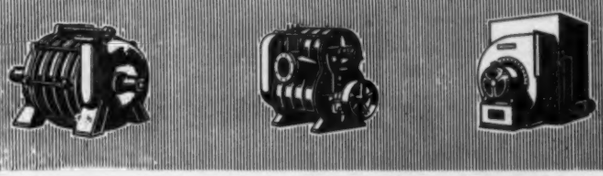

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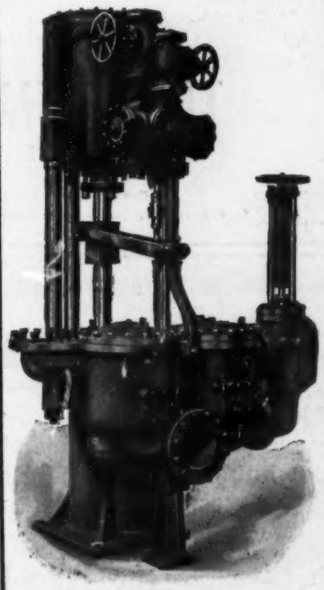

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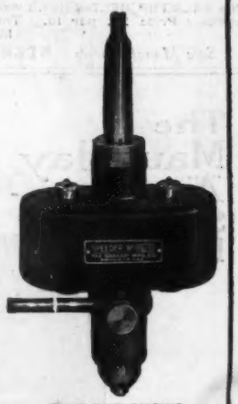

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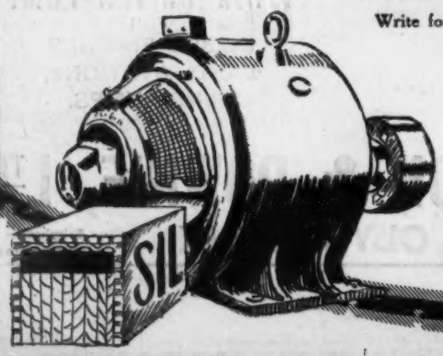

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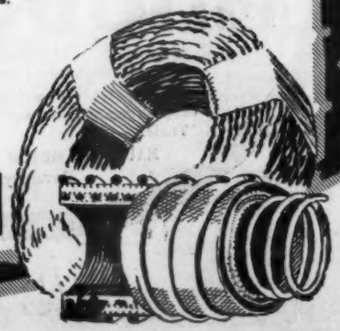

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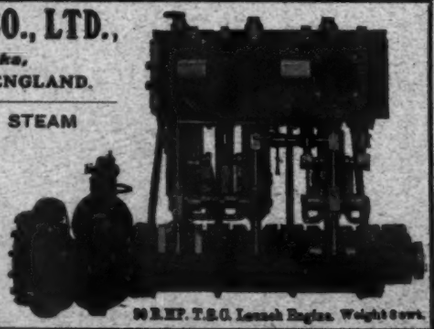
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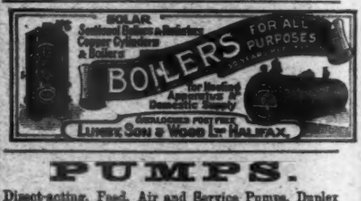

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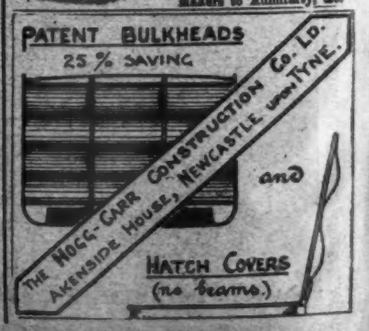
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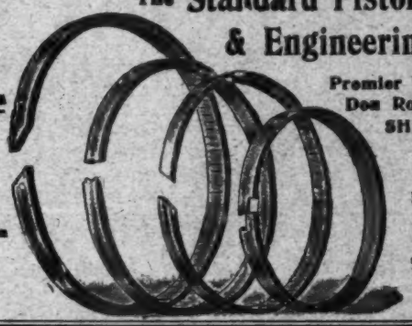

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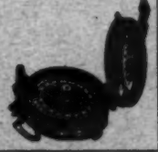

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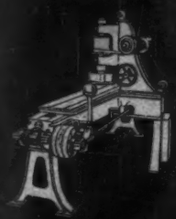

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